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ROYAL ANTHROPOLOGICAL INSTITUTE

OF

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NOTICE

For convenience of reference, all volumes of the new (imperial octavo) series which began in 1898 are numbered in continuation of the old demy octavo series, Vols. I-XXVII. Thus Vol. I of the imperial octavo series=Vol. XXVIII of the old series; and the present Vol. LIII corresponds to N.S. Vol. XXVI.

The Index to the present volume includes an index to the Institute's monthly publication *MAN* for the year of issue 1923.

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JOURNAL

OF THE

ROYAL ANTHROPOLOGICAL INSTITUTE

OF GREAT BRITAIN AND IRELAND.

MINUTES OF THE ANNUAL GENERAL MEETING,
TUESDAY, JANUARY 23RD, 1923.

Prof. J. L. MYRES, *Vice-President, in the Chair.*

The Minutes of the last Annual General Meeting were read and accepted.

Prof. MYRES appointed Mr. GARFITT and Miss DURHAM as Scrutineers, and declared the ballot open.

The HON. SECRETARY read the Annual Report of the Council for 1922, and, on the motion of Dr. RUSHTON PARKER, seconded by Mr. SKEAT, this was accepted.

The HON. TREASURER read the Financial Report for 1922, and, on the motion of Mr. E. G. HARMER, seconded by Mr. P. E. NEWBERRY, this was also accepted.

In the absence of Prof. Sir ARTHUR KEITH, Acting President, through illness, Prof. J. L. MYRES, Vice-President, read a Paper on "The Year's Work in Anthropology."

The SCRUTINEERS delivered their Report, and the following were declared duly elected as Officers and Council for 1923-24.

President.—Prof. C. G. Seligman, M.D., F.R.S.

Vice-Presidents.

Sir J. G. Frazer, D.C.L., LL.D., Litt.D., F.R.S.

Capt. T. A. Joyce, M.A., O.B.E.

Prof. J. L. Myres, M.A., F.S.A., F.R.G.S.

Hon. Secretary.—E. N. Fallaize, B.A.

Hon. Treasurer.—F. C. Shrubsall, M.A., M.D.

Hon. Editor.—H. S. Harrison, D.Sc.

Council.

C. O. Blagden, M.A.

H. J. Braunnholtz, M.A.

M. C. Burkitt, M.A.

L. H. Dudley Buxton, M.A.

L. C. G. Clarke.

R. J. Gladstone, M.D.

W. L. Hildburgh, M.A., Ph.D., F.S.A.

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Capt. E. W. Martindell, M.A.

Miss M. A. Murray.

Percy Newberry, M.A., O.B.E.

Prof. F. G. Parsons, F.R.C.S.

H. J. E. Peake.

Prof. W. Flinders Petrie, D.C.L., LL.D.,
F.R.S., F.B.A.

S. H. Ray, M.A.

Charles Singer, M.D., F.R.C.P.

W. W. Skeat, M.A.

E. Torday.

S. Hazzledine Warren, F.G.S.

R. W. Williamson, M.Sc.

A hearty vote of thanks to Prof. MYRES was proposed by Mr. PEAKE, who asked in the name of the Institute that Prof. MYRES would allow his address to be published in the *Journal*. This was seconded by Dr. C. SINGER and was carried unanimously.

The Institute then adjourned.

REPORT OF THE COUNCIL FOR THE YEAR 1922.

DEATH OF DR. W. H. R. RIVERS, PRESIDENT 1921-1922.

IN presenting its Report for the year 1922, the Council wishes first to place on record its sense of the great loss which the science of Anthropology and this Institute have suffered by the untimely death of its President, Dr. W. H. R. Rivers, which took place after an operation on June 4th last.

The following resolution in reference to the death of Dr. Rivers was passed by the Council at a meeting held on June 13th :—

“This Council wishes to place on record its sense of the irreparable loss which has befallen the Royal Anthropological Institute, and the sciences of Anthropology and Psychology, by the untimely death of William Halse Rivers Rivers, President of the Institute, whose personal influence, enthusiasm for knowledge, work in the field, the laboratory and the study, as well as the generous assistance he gave to his fellow-workers, did much for the advancement of learning.”

The Council notes with appreciation the formation of an influential Committee which is about to issue an appeal for funds for a memorial of Dr. Rivers.

MEMBERS.

There has been a satisfactory addition to the number of Fellows during the year, the net increase being 37. The figures are as follows :—

—	Total Jan. 1st, 1922	Loss by death or resignation.	Since elected.	Total Jan. 1st, 1923.
Honorary Fellows	36	2	3	37
Local Correspondents	19	1	3	21
<i>Deduct Ordinary Fellows</i>	3	—	—	3
Affiliated Societies	16 4	—	—	18 4
Ordinary Fellows :—				
Compounding	52	2	3	53
Subscribing	450	15	48	483
	558	20	57	595

The Council regrets to record the death of the following Fellows in the course of the year :—Mr. M. Longworth Dames (elected 1902, Obituary notice in *Man*, No. 38, 1922), Dr. W. H. R. Rivers (elected 1900, Obituary notice in *Man*, No. 61, 1922), Prof. W. Gowland (elected 1887, Obituary notice in *Man*, No. 73, 1922), Mr. Percy Smith (elected 1914, Obituary notice in *Man*, No. 70, 1922), Capt. T. W. Whiffen (elected 1910), Dr. G. S. Hitchcock (elected 1920), Mr. T. H. Vines (elected 1915), Dr. E. Seler (elected 1910), Mr. C. Bowly (elected 1872), Dr. Moriz Hoernes (elected 1909), Mr. W. C. Allen (elected 1915).

PUBLICATIONS.

Two parts of the *Journal* have been published during the year, vol. li, Part 2 and vol. lii, Part 1. The sales to date amount to 105 of the former and 120 of the latter, as against 106 of each of the two parts published in the preceding year.

Twelve monthly parts of *Man* have appeared, the amount realized from subscriptions and sales being £241 11s. 6d., as against £209 19s. in 1921.

LIBRARY.

The additions to the Library comprise 522 items of which 171 are bound volumes. A number of periodicals have been added to the list of publications received in exchange for the publications of the Institute.

MEETINGS.

Fourteen Ordinary Meetings have been held as against 19 (10 ordinary and 9 special) in the preceding year. The Huxley Memorial Lecture was not delivered, as Professor Marcellin Boule was unable, under doctor's orders, to visit England in the autumn. The Huxley Medal has, however, been forwarded to Professor Boule and his address will appear in the forthcoming part of the Institute's *Journal*.

RESEARCH COMMITTEES.

One meeting of a Research Committee has been held during the year, at which a discussion on the distribution of the leaf-shaped swords of the Bronze Age was opened by Mr. Peake. The work of the Committee to explore caves in the Derbyshire District has been hampered by lack of funds, but a report of the work

which it has been possible to carry out will appear in the *Journal* for 1923. Two new Committees were appointed during the year: one will investigate records taken at the Military Neurological Hospital, Richmond, with a view to attempting a correlation of physical and mental characters; the second was appointed to investigate the authenticity of certain harpoons of Maglemose type said to have been found in Holderness, Yorkshire. A report of the findings of this Committee has been presented to Council and will be published shortly in *Man*.

LOCAL BRANCHES OF THE INSTITUTE.

The Council has adopted By-laws enabling Fellows to apply for sanction to establish branches of the Institute for the purpose of holding meetings in localities in which not less than eight members are resident. Such a Local Branch has already been established for Edinburgh and the Lothians.

BRITISH EMPIRE EXHIBITION.

The Council has been invited to organize an anthropological section of the British Empire Exhibition to be held in 1924.

LOCAL CORRESPONDENTS IN EASTERN EUROPE.

In order to keep Fellows of the Institute more closely in touch with the results of anthropological research in other countries, the Council has decided to extend the system of Local Correspondents. A beginning has been made by the appointment as Local Correspondents of a number of prominent anthropologists in the countries of Eastern Europe, who have undertaken to furnish periodical surveys of the work which is being carried on in their respective areas.

THE TEACHING OF ANTHROPOLOGY AND THE ESTABLISHMENT OF A CENTRAL BUREAU.

The question of the Teaching of Anthropology and the Establishment of a Central Bureau which was re-opened by Sir Richard Temple's communication to Section H of the British Association at the Edinburgh Meeting in 1921, has been under the consideration of a Conference of representatives of Universities, Learned Societies and other bodies, summoned by the British Association.

Certain proposals, drafted after consultation with a sub-committee of the Institute's Council, have been forwarded to the Council of the Association by the Conference and, if adopted, will be communicated to the Institute in due course.

TREASURER'S REPORT, 1922.

The Revenue Account for 1922 shows receipts £1,941 10s. 8d. and expenditure £1,635 10s. 7d., a favourable balance of £306. Whereas the year began with an overdraft of £123 2s. 8d. and £48 3s. 3d. held on account of *Notes and Queries*, it ends with a credit balance of £141 8s. 9d. in the Current Account and £50 on deposit with the bankers against £1 5s. for an uncleared cheque and £61 9s. held on account of *Notes and Queries*, leaving £128 14s. 9d. wherewith to commence 1923. This result, though more favourable than might have been anticipated, must not be over-estimated, since it has mainly been attained by some reduction in the publications, particularly in the *Journal*; that this has not been more apparent is due to the skilled selection of contents by the Editor. As yet there has been little decline in the cost of printing and publication, so that it is to be feared that rigid economy will still need to be the rule with the new Council in the coming year.

The number of new Fellows shows a gratifying increase, the receipts from "current subscriptions" being £50 in excess of last year, but the total receipts from subscriptions shows a decrease, owing on the one hand to the number of Fellows who paid in advance in 1921, and on the other to Mr. Williamson's vigorous campaign having so reduced the numbers whose payments were in arrears as to leave a smaller amount available for 1922. Increases of £9 from the sale of the *Journal* and of £50 from the sale of *Man* have to be reported; on the other hand the income from investments shows a decrease of £24, and that from the "Featherman Bequest" a decrease of £7 as a result of the alteration in the rate of exchange with the United States which, though favourable to the country, has been against the limited interests of the Institute. "Returned Income Tax" accounts for £59 13s. 3d., being a return for a period of three years at the rate of 6s. in the £1, and, therefore, a figure unlikely to be repeated. Entrance fees supplied £56. These two items supply nearly the whole of the surplus with which the Institute commences the current year, a point to be borne in mind by those who might wish to earmark "Entrance Fees" for some specific purpose, as is a not uncommon practice in many societies. Such a procedure, laudable though it be, can scarcely be recommended for immediate adoption.

On the debit side reductions of £180 in the cost of the *Journal*, of £80 in the cost of *Man*, and of £123 in "Printing and Stationery" have to be noted, the latter item alone, which changes the character of the balance sheet, being due to the lessened cost of "authors' reprints" with the reduction in the size of the *Journal*. It might

indeed be well, if the price of production keeps up, for the Institute to consider whether some change should not be made in the matter of the supply of reprints. Expansion in services can scarcely occur without the certainty of increased income from subscriptions, but the experience of the two last years offers every encouragement to the hope that such a condition may eventuate.

FRANK C. SHRUBSALL,

Hon. Treasurer.

ROYAL ANTHROPOLOGICAL INSTITUTE

ACCOUNTS FOR

PAYMENTS.	REVENUE	
	£ s. d.	£ s. d.
RENT.....	202 12 6	
<i>Less</i> Rent of small room	42 0 0	160 12 6
"JOURNAL"	600 4 11	
<i>Less</i> contribution to cost of blocks and tables	36 10 0	563 14 11
"MAN"		404 0 3
SALARIES		202 0 10
HOUSEKEEPING		32 5 4
ADVERTISING		10 18 6
STAMPS AND PARCELS		91 12 3
TELEPHONE AND TELEGRAMS		13 0 10
PRINTING AND STATIONERY		51 8 5
COAL, GAS, AND ELECTRIC LIGHT		13 10 2
EPIDIASCOPE		7 0 0
INSURANCE—		
Fire	5 0 0	
Other	5 7 6	10 7 6
SUBSCRIPTIONS TO OTHER SOCIETIES, DIRECTORIES, ETC.		0 10 4
BANK CHARGES AND COMMISSION		1 15 10
SUNDRIES		16 16 5
"HUXLEY LECTURE"		1 9 6
TYPEWRITER		2 16 6
ADDRESSOGRAPH.....		0 16 6
TRAVELLING		1 8 6
AUDITORS' FEE		3 3 0
LONDON ASSOCIATION FOR THE PROTECTION OF TRADE.....		2 2 0
REPAIRS TO LAVATORY		4 15 6
TRANSFER TO LIBRARY ACCOUNT		20 18 0
Balance carried forward, 31st December, 1922		357 3 4
		<u>£1,902 13 11</u>

OF GREAT BRITAIN AND IRELAND.

THE YEAR 1922.

ACCOUNT.

	RECEIPTS.	£	s.	d.	£	s.	d.
BALANCE BROUGHT FORWARD, 1st January, 1922.....					51	3	3
SUBSCRIPTIONS :—							
Current		886	6	3			
Arrears		31	11	0			
Advance		32	18	5			
Life		94	10	0			
					1,045	5	8
ENTRANCE FEES					50	13	0
SALE OF "JOURNAL"					253	5	10
SALE OF "MAN"		355	3	8			
Less Refunds		0	16	0			
					384	7	8
SALE OF "HUXLEY LECTURE"					3	15	10
ADVERTISING					5	18	7
DIVIDENDS AND INTEREST		89	12	5			
" (AMERICAN DOLLAR BONDS)		36	18	6			
					126	10	11
RETURN OF INCOME TAX.....					59	13	3
USE OF ADDRESSOGRAPH.....					1	0	0
DONATION FROM CRAIG LWYD COMMITTEE.....					4	19	11

 £1,992 13 11

ACCOUNTS FOR

LIBRARY

	£	s.	d.
BOOKS AND BINDING	29	18	0

HOUSING

	£	s.	d.
BALANCE, 1922	126	2	9

£126 2 9

GRAIG LWYD

	£	s.	d.
TRANSFER TO REVENUE ACCOUNT.....	4	19	11

ANTHROPOMETRIC

	£	s.	d.
BALANCE, 1921	10	8	0
PURCHASE OF INSTRUMENTS.....	24	0	0

£34 8 0

THE YEAR 1922—continued.

ACCOUNT.

	£	s.	d.
TRANSFER FROM REVENUE ACCOUNT	29	18	0

FUND ACCOUNT.

	£	s.	d.
BALANCE, 1921	121	12	10
DONATIONS AND INTEREST	4	9	11
	<u>£126</u>	<u>2</u>	<u>9</u>

COMMITTEE ACCOUNT.

	£	s.	d.
BALANCE, 1921	4	19	11

INSTRUMENT ACCOUNT.

	£	s.	d.
SALE OF INSTRUMENTS	18	10	6
BALANCE, 31st December, 1922	15	15	6
	<u>£34</u>	<u>6</u>	<u>0</u>

W. H. R. RIVERS.¹

By J. L. MYRES.

WE meet here to-day under the shadow of a great loss and a personal sorrow. For the first time, I think, a President of this Institute has died in office; and, what is more, in the midst of a distinguished career. Tribute to the memory of our late President has been paid already in the obituary article in *Man*, and in the estimate of his psychological work which formed the address of Dr. C. S. Myers to the Psychological Section of the British Association at Hull. But an occasion which would have meant so much to him, and to us if we could be listening to him to-day, must not pass without commemoration of his work for anthropology. Coming to our subject from the new standpoint of experimental psychology, of which he was the first University Lecturer in Cambridge; coming, too, with anthropology and over-sea travel "in the blood"—for he was of an old naval family, and his mother's brother, Dr. James Hunt, was founder and first President of the Anthropological Society of 1863—he was already in a position to realize, as few men could, and as he himself was telling us only a year ago, how "every form of social activity, whether it be a marriage regulation, a religious rite, a mode of warfare, or the polishing of an implement, is in the last resort determined by psychological motives." Devoted primarily, as he said later in his Croonian Lectures in 1906, to that "individual psychology which deals with the differences in the mental constitutions of different peoples, and (by an extension of the term) to the differences which characterize the members of different races," he was an ideal member of such a party as achieved the great Cambridge Expedition to Torres Strait in 1898; "getting to know the individual in relation to his environment," so far as human sympathy and ingenious and accurate experiment could take him, with the help of colleagues like Dr. McDougall and Dr. Myers, who owe much of their own training and outlook to his influence. It was real pioneer work, and, apart from the positive results, which were considerable, opened a large new prospect of anthropological enquiry.

With experience gained in Torres Strait, Rivers was able to make researches of great value, in Egypt, among the Todas, and later in Melanesia, on the psychological aspect of the behaviour and observances of selected types of peoples. And all the time he was keeping up minute acquaintance with his own psychological field, and producing a long series of papers on the physiological aspect of mental events. His demonstration in 1908 (about the time of his admission to the Royal Society), that "changes in consciousness, originally arising in connection with muscular

¹ This is a portion of an address given by Professor J. L. Myres at the Annual General Meeting of the Institute.

activity, may later occur in the absence of that activity," threw exceptionally valuable light on the nature of "illusions," and not least on the place occupied by such illusions in the mental experience of unsophisticated man.

As early as the Torres Strait Expedition, Rivers had given proof of his scrupulous ingenuity in research by his use of what is generally known as the "genealogical method" for the analysis of social institutions, and the precise description of unfamiliar systems of relationships. In this field of work his contributions to the fourth edition (1912) of *Notes and Queries on Anthropology* were a revelation to all but an inner circle of colleagues, and set a standard of workmanship in the field which has been adopted by general consent.

With further experience of this method of enquiry, during his later travels in Melanesia, he found himself confronted with a series of problems of a rather different order. Just as the analysis of a system of consanguinity into its elementary relationships revealed the meaning and coherence of the whole, or, in certain cases, detected the coexistence of incongruous conceptions unsuspected before; so the analysis of the component arts and industries of a group of related and adjacent types of culture showed the closer coherence, and more nearly coincident distribution, of certain modes of behaviour, or ways of satisfying material needs; and led to the conclusion that where more than one such group of similar distributions could be detected within the same regional culture, there was reason to suppose that such a culture had reached its actual complexity by accumulation or superposition of one type of culture on another; and that such superposition was best explained by successive introduction of different groups of immigrant people into the same region.

This hypothesis was not new. The method had been employed in comparative philology, since the days of Grimm and Bopp; and in prehistoric archaeology, since the determination of the stratigraphical sequence of stone, bronze and iron cultures in the Swiss lake-settlements in 1855. It had been greatly extended and improved by Flinders Petrie's application of "sequence-dating" to the remains of the pre-dynastic age in Egypt, in 1895. Even in the study of institutions and beliefs, for example in classical mythology, a good deal had been done to distinguish earlier from later strata of survivals, to attribute them to distinct ethnic sources, and to associate one such stratum or another with certain elements in the archaeological series: a notable (if not always convincing) illustration of this procedure is in Ridgeway's *Early Age of Greece*. What Rivers did was to analyze and reformulate clearly this so-called "historical method" itself, and to illustrate it from the region which most amply and conveniently offered the appropriate material, namely, the Melanesian archipelagoes, a vast Ægean under the lee of the continental mass of South-Eastern Asia. For such stratigraphical analysis he was already prepared by his special and highly suggestive researches with Dr. Henry Head, long before, into the structure of the nervous system in Man, and by his

conviction, based on significant observations in detail, that it was possible to discover (as he put it) "different mental levels corresponding to different neural levels" in the make-up of an individual. And it was but an extension of this hypothesis, and of his general view of the manifestations of culture, in arts and institutions alike, as "in the last resort determined by psychological motives," which inspired him to detect behind contrasted techniques, or mythologies, or social organizations, the distinct mental equipments of their respective authors.

For popular reading, his presidential address in the Anthropological Section of the British Association in 1911, on the "Ethnological Analysis of Culture," is, perhaps, over-condensed; and his great *History of Melanesian Society*, published in two volumes in 1914, too full of detail, though it is admirably lucid in its argument. For the beginner, however—and are we not all in some sense beginners in these matters?—there is his paper on "History and Anthropology," in the monthly periodical *History* for 1920, reprinted separately since in that useful and suggestive series entitled *Helps to the Study of History*. This paper, it should be noted, belongs to the third and last period of a career and a character which in a sense were only coming to maturity at the moment when they were so suddenly cut off. For it was in the latter years of the war, with all his gifts and energies concentrated on the task, so completely congenial to him, of applying his peculiar insight into the borderland between physiology and psychology, to the treatment of neural and mental wounds, that Rivers "found himself," as some men do "find themselves" comparatively late in life. We have seen how "getting to know the individual in relation to his environment" had been his own definition of the problem before him in peace. It was with this object that, as nerve specialist to the R.A.F., he shared the most audacious evolutions of his aviators; and it was in the stress of this new environment that he got to know himself. His last important book, on *Instinct and the Unconscious*—though he himself thought more highly of his *History of Melanesian Society*—shows the direction in which his mind was travelling, no less than the profound effect of his war experiences on his own outlook and temperament. It was in this new phase, and in the happy surroundings of fresh work as Prælector in Natural Science at St. John's College, which brought intimate personal acquaintance with a multitude of young students in every branch of a vast subject, that he wrote his "Presidential Address" for us last year, insisting—as few had so good a right to insist—on the coherence of all the various modes of approach to anthropological problems, and the necessity of closer touch between the special sciences into which the "Science of Man" so easily falls apart. It was in this mood, too, that he was planning, as President of the new Psychological Section of the British Association, his address "On the Herd Instinct," the main lines of which we may fairly reconstruct for ourselves from phrases in his later published work, and from the memoirs we owe to his friends. The influence of such an intellect, and such a character, does not easily fade. Pupils and colleagues and friends know best what

each owes to a man of this quality; this Institute, too, knows how generously he gave of his best; and the end is not yet, if we have "learned his great teaching." *Si monumentum quæris, prospice.*

Other losses we must deplore, in the death of William Gowland, Robert Codrington, Longworth Dames, and Moriz Hoernes.

Dr. Gowland came to anthropology from chemistry, by the double link of his experience as adviser to the Japanese Mint from 1872 to 1888, which gave him the opportunity of studying minutely the more primitive processes of metal-working, and of conducting extensive excavations among early Japanese tombs. His contributions to the early history of the more important metals are of the highest value; and his knowledge of Japanese methods of manipulating and transporting large blocks of stone, no less than his minute and methodical observations of early stone monuments, made him the obvious man to undertake the first systematic operations for the maintenance and dissection of Stonehenge. He was a devoted Fellow of the Institute, and an active and valued member of its Council.

Dr. Codrington, a contemporary of the very founders of our science, was an early and distinguished example of the missionary-linguist and ethnologist. For a generation he inspired and directed a whole school of students of Melanesian languages, and his great book published in 1885 contains the analysis of no less than thirty-four of these. His better-known volume, *The Melanesians: Studies in their Anthropology and Folklore*, appeared in 1891, and remains the classical account of the conception of *mana*, which has been so widely generalized since, and so copiously discussed. I remember meeting him about the time of its publication, at Dr. Tylor's house; a man of quiet, grave presence, deliberate and impressive speech, a fine scholar, an alert observer of common things, a wise and tolerant critic, a man of distinguished friendships. To listen to Codrington and Tylor discussing ethnological questions was an initiation.

Mr. Longworth Dames brought to our Fellowship wide experience of Indian administration, and a large store of observations, especially in the departments of Folklore and Institutions. He was long a working member of our Council, and a leading member of the Folklore Society.

Dr. Moriz Hoernes, one of our most distinguished Honorary Fellows, had been for more than a generation a leading teacher, and master of method, in the prehistoric archaeology of Central Europe, and the organizer of research and excavation in support of the Imperial Museum of Vienna. His *Urgeschichte des Menschen*, *Urgeschichte der Kunst*, and *Der Diluviale Mensch* are standard textbooks, and he leaves probably a larger school of trained followers habituated to co-operative research than any of his contemporaries in that branch of learning.

Other losses by death have already been announced in the Report of the Council; it is for us who remain, to see that our Fellowship is worthily maintained.

EXCAVATIONS AT GHAR DALAM (DALAM CAVE), MALTA.

By G. DESPOTT.

[WITH PLATES I—IV.]

THE excavations here described were conducted at Ghar Dalam between the summer of 1918 and that of 1920, and consisted in the digging of three large trenches spoken of as—

- (1) The outer trench.
- (2) The middle trench.
- (3) The inner trench.¹

The first piece of work consisted in examining that portion of cave earth between the trench dug in 1916, described in *Report of British Association* of that year, and the trench dug in 1917, described in *Journal of the Royal Anthropological Institute* of 1918.

These two trenches differ little as regards either stratification or remains from those here dealt with. A word may, however, be added concerning the human remains of the older excavations (Pl. IV, Figs. 3 and 4). These consisted in—

- (1) Two molar teeth and a phalanx, in the third layer.
- (2) A phalanx in the second layer.
- (3) A canine tooth in the third layer.

It is perhaps also important to mention an incisor tooth of a horse found almost at the top of the last-mentioned layer. This incisor is notably smaller than that of a modern horse.

MIDDLE TRENCH.

The first trench excavated in the new operations was the middle trench, which runs from the trench of 1917 to an old rubble wall which stands about 18 feet nearer to the entrance of the cave. This trench is, therefore, now about 33 feet long, having an average width of 26 feet.

The organic remains found here consisted of some very friable bones of the pig, dog, sheep or goat, cow, horse, rabbit, rat and bat, along with many shells of *Helix aspersa* and clumps of the common seaweed (*Posidonia caudina*). The inorganic remains consisted of a good number of potsherds belonging to various periods, ranging from the Punic to the present age.

Along this relatively small portion of the cave floor were remarkable differences in both thickness and extension of the different strata, and this induced me to leave

¹ *Vide* plan and sections of the cave, p. 19 (kindly prepared by George Sinclair, Esq.).

GHAR DALAM. SKETCH PLAN. FRONT PORTION.

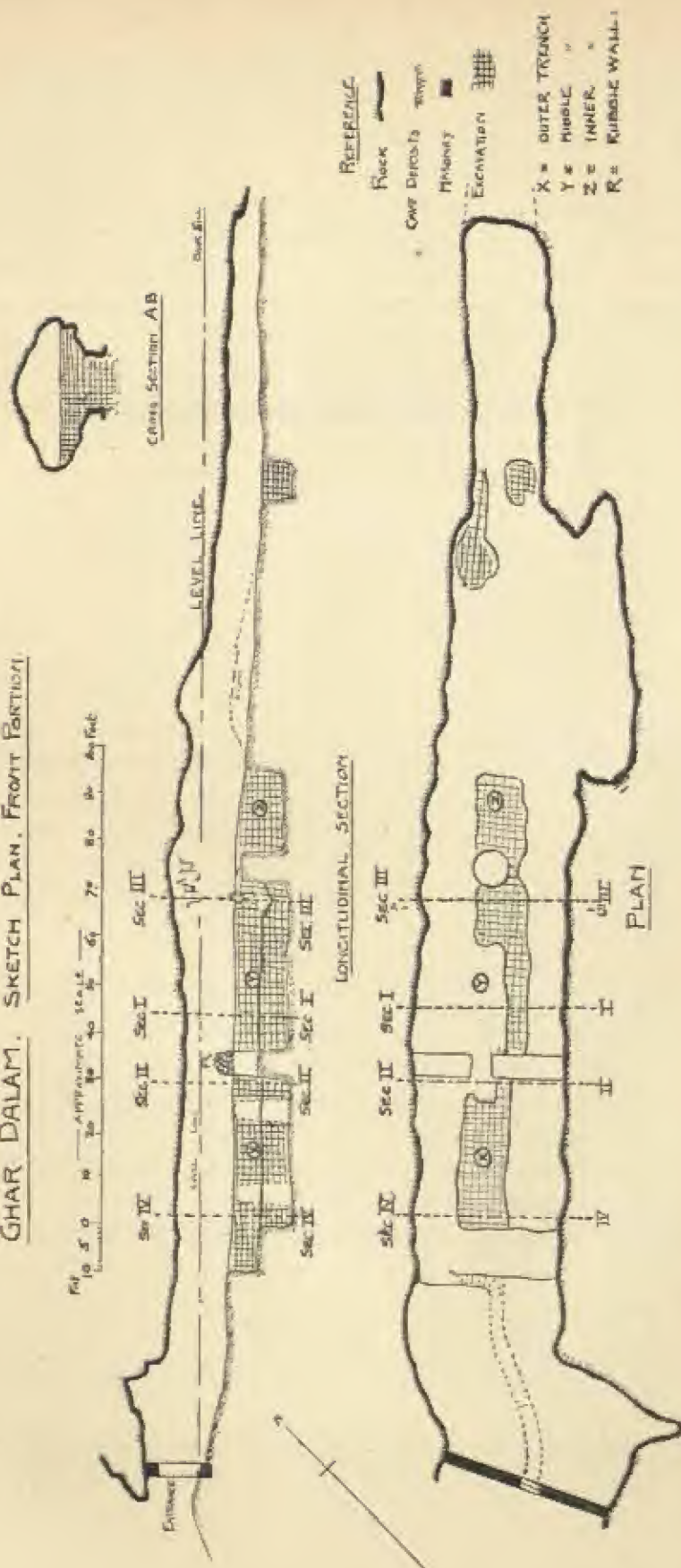


FIG. 1.—PLAN AND SECTION OF THE CAVE. (PREPARED AND FURNISHED BY GEO. SINCLAIR, ESQ.)

standing in their original position portions of earth for future reference. Evidently floods had hollowed different parts of the floor, on which new material was then deposited and had thus formed layers described by Cooke as "lenticular." Some of these were 2 feet in depth and had a diameter of 20 feet or even more; others which were also about 2 feet deep were only about 3 feet in diameter. Animal remains have been found in some of these deposits.

The complete series of layers here is as follows:—

- (1) Red soil varying in thickness from 1 to $2\frac{1}{2}$ feet.
- (2) Interrupted layers of whitish light earth, something like *Torba* in consistency and varying in thickness from 1 to 3 inches or more.
- (3) Red earth 1 to 4 inches thick, having in it some thin layers of a different sort of soil.
- (4) Whitish light earth, 3 to 6 inches deep, very similar to No. 2.
- (5) A similar soil, only differing in consistency, being somewhat clayey, varying in thickness from 5 to 8 inches.
- (6) A whitish soil of a peaty consistency, 5 to 6 inches deep.
- (7) Reddish soil about 5 inches thick, having in it several layers of lighter or darker soil varying in thickness from 2 inches to a few lines.
- (8) Dark reddish soil about 1 inch thick.
- (9) Lighter reddish soil 2 to 3 inches thick.
- (10) Whitish earth $\frac{1}{2}$ to $2\frac{1}{2}$ inches thick.
- (11) Reddish clayey earth $1\frac{1}{2}$ to 2 feet deep.

A detailed description of the layers forming the inner side of the middle trench will give a good idea of the changes in the different strata.

- (1) Red soil 1 to 2 feet in depth, with stones embedded.
- (2) Same sort of soil but practically free from stones, and having a few bits of the remains of deer.
- (3) Red earth with small bits of stones and stalactites and bones of stag. Some of these bones have the outer part of a black colour, whilst internally they are of an ashy-grey. Some of them have bits of stones and stalactites adhering to them by means of a stalagmitic infiltration. This layer is between 3 and 4 inches thick.
- (4) Red soil mingled with whitish clay $1\frac{1}{2}$ to 2 feet deep. The remains of deer are pretty common, especially at the bottom of this layer.
- (5) A layer 3 to 4 inches deep, consisting of red earth wherein are embedded stones of various shapes, especially flat.

We may now take the principal layers of this trench together with the organic remains found in each.

1st Layer.—This layer consisted mainly of red earth and stones, and varied in depth from 1 to $3\frac{1}{2}$ feet.

The following are the organic remains found therein :—

Mammalia.

Man.—Some phalanges and teeth found at a depth of 2 to 3½ feet.

Pig.—Several molars found at surface of layer and a mandible at a depth of about 2 feet.

Deer.—A few fragments of bones and antlers in various stages of mineralization ; probably belonging to two distinct species of the genus.

Rats.—A great abundance of bones, probably belonging to these rodents, found at the surface of this layer towards the left side of the cave. These, however, were so friable that not a single bit could be saved.

Aves.

A few bits of birds' bones at various depths, not yet identified.

Pisces.

A vertebra of a fish found at bottom of layer. It appears too much fossilized for this depth.

Mollusca.

Macularia vermiculata (Mull.).—Shells of this snail found in great profusion in various parts of the layer ; amongst them there are several distinct forms of the species.

Rumina decollata (Lin.).—The shells of this species were equally common all through this layer.

Papillifera oscitans (Fer.).—Fairly common. No difference can be seen in these specimens from those of the recent ones found in the neighbourhood of the cave.

Papillifera bidens (L.).—Also common and quite similar to recent specimens.

Mastus pupa (Brug.).—Frequent, especially near the left-hand side.

Cyclostoma melitense (Sowb.).—Also frequent and identical with the recent species.

Xerophila ceruanae (Kob.).—Very scarce. The few specimens met with are very small, quite unlike those which are very common in the vicinity to-day.

Trochus turbinatus (Born.).—Fragments of this marine species were met with at various depths. Very probably the species was used for food, as it is also used by some people to-day.

Some of the shells of *Rumina*, *Papillifera*, and *Bulimus* found near the large stalagmite, and almost at the bottom of this layer, have a stalagmitic coating, showing perhaps the length of time they lay in the same spot undisturbed.

Echinoidea.

Cidaris.—A species was found at the bottom of this layer ; it might have, perhaps, served as a tool for making incisions on pottery, as the species is not edible.

The inorganic remains consisted of a great number of potsherds, some sling-stones, flints, and a few ornaments. Of these the following are the most important :—

Pottery.

- (1) A bit of very well baked pottery, $\frac{1}{4}$ inch thick, internally is of slate colour, outer part is of a fine ochre, having also a fine slip. The incisions on this sherd are well marked and accurate. Depth about 3 feet. (Pl. I, Fig. 1, No. 1.)
- (2) A fragment of pottery of a somewhat coarser texture than the foregoing, having a similar slip, the incisions not so perfect. Internally this sherd is of slate colour, having some buff on the outside. Thickness about $\frac{1}{2}$ of an inch, depth 3 feet. (Pl. I, Fig. 1, No. 2.)
- (3) A sherd of same texture, thickness and colour as No. 1, but having no slip, and a different design. (Pl. I, Fig. 1, No. 3.)
- (4) A fragment of well-baked pottery of yellowish-grey colour, having a slip similar to that on No. 1. The designs are coarser. Thickness about $\frac{1}{2}$ inch, depth 3 feet. (Pl. I, Fig. 1, No. 4.)
- (5) A bit of well-baked pottery of a reddish colour, having a very dark slip on the outside. The incisions can be seen to have been cut on the dry clay. Thickness nearly $\frac{1}{2}$ inch, depth $2\frac{1}{2}$ feet. (Pl. I, Fig. 1, No. 5.)
- (6) A very fine sherd of buff colour internally, with yellowish-grey slip on the outer side. Incisions similar to the impression made on fresh clay by a twisted string. Thickness less than $\frac{1}{4}$ inch, depth $2\frac{1}{2}$ feet. (Pl. I, Fig. 1, No. 6.)
- (7) Very well baked bit of pottery, less than $\frac{1}{4}$ inch thick. Inside colour reddish, externally it varies from a bright red to a dark yellowish-grey, bearing also a fine slip. Depth over 3 feet. (Pl. I, Fig. 1, No. 7.)
- (8) A sherd which varies in thickness from $\frac{1}{4}$ to $\frac{1}{2}$ of an inch. Inside of a reddish-grey colour and a red and brown slip on outside. Incisions very deep. Depth $3\frac{1}{2}$ feet. (Pl. I, Fig. 1, No. 8.)
- (9) This sherd is similar in texture to No. 7, but designs are more perfect and evidently carved on dry clay. Depth about 2 feet. (Pl. I, Fig. 1, No. 9.)
- (10) Similar in texture to No. 6, bearing also similar impressions. Depth 3 feet. (Pl. I, Fig. 1, No. 10.)
- (11) Identical in texture and design to a bit found by Dr. Ashby in 1916. Depth about 3 feet. (Pl. I, Fig. 2, No. 1.)
- (12) Very rough texture. Incisions very irregular and rather deep, buff colour. (Pl. I, Fig. 2, No. 2.)
- (13) Very rough texture, less than $\frac{1}{4}$ inch thick, coarse and deep incisions, colour red and black. Similar to the pottery found at Borg in-Nadur. Depth 2 feet. (Pl. I, Fig. 2, No. 3.)

- (14) Similar in texture to No. 1. Incisions also regular, but it bears no slip. Depth $2\frac{1}{2}$ feet. (Pl. I, Fig. 2, No. 4.)
- (15) Similar in texture to No. 11, or possibly a little finer; it bears well-marked lines and varies in thickness from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch. (Pl. I, Fig. 2, No. 5.)
- (16) Very fine texture bearing fine incisions and grey slip. Depth $3\frac{1}{2}$ feet. (Pl. I, Fig. 2, No. 6.)
- (17) Very coarse texture, the lines incised on it very rough. Poorly baked, about $\frac{1}{2}$ inch thick. Depth $1\frac{1}{2}$ feet. (Pl. I, Fig. 2, No. 7.)
- (18) A fragment of a handle shaped perhaps as a pig's head. Colour grey, well-baked. Depth $2\frac{1}{2}$ feet. (Pl. III, Fig. 1, No. 1.)
- (19) Finer texture than the preceding, having finer incisions and two holes in a slight knob, which was possibly meant for a handle. Depth nearly 4 feet. (Pl. III, Fig. 1, No. 2.)
- (20) Handle of very fine texture, colour fine reddish buff. The pattern has not yet been met with amongst the pottery found in the cave. Thickness about $\frac{1}{8}$ inch, depth 3 feet. (Pl. III, Fig. 1, No. 3.)
- (21) Roughly made handle of coarse pottery. Depth $2\frac{1}{2}$ feet. (Pl. III, Fig. 1, No. 4.)
- (22) Handle of very fine shape, coarse pottery. Depth $1\frac{1}{2}$ feet. (Pl. III, Fig. 1, No. 5.)
- (23) Portion of handle of reddish pottery with many particles of shells in it. Depth about $2\frac{1}{2}$ feet. (Pl. III, Fig. 1, No. 6.)
- (24) Very rough handle of very coarse pottery, containing also fragments of shells. Exterior colour reddish, interior grey. Thickness about $\frac{1}{4}$ inch. Depth 3 feet. (Pl. III, Fig. 1, No. 8.)
- (25) Portion of a handle of same type as the foregoing but finer. About $\frac{1}{8}$ inch thick, depth 3 feet. (Pl. III, Fig. 1, No. 9.)
- (26) Handle of a finer quality, with regular incised lines. Though rather thick, the body of the vessel to which it belonged was not more than 2 or 3 lines in thickness. Depth $2\frac{1}{2}$ feet. (Pl. III, Fig. 1, No. 10.)
- (27) The most perfectly made handle amongst those found during the period of the excavations. Of a fine texture and dark slate colour. The incised lines are most accurately drawn. Depth 2 feet. (Pl. III, Fig. 1, No. 11.)
- (28) A handle similar in shape to No. 24, the texture similar to that of No. 25. Depth about 3 feet. (Pl. III, Fig. 1, No. 12.)
- (29) A handle, the shape of which is so far unique, composed of very rude pottery of a reddish and grey colour. Depth $2\frac{1}{2}$ feet. (Pl. III, Fig. 1, No. 13.)
- (30) Fragment of handle of fine pottery, grey colour, with few lines incised. Depth $2\frac{1}{2}$ feet. (Pl. II, Fig. 1, No. 1.)

- (31) Portion of handle of greyish pottery, with very roughly incised lines, originally filled with a white material. The vessel had a thickness of about $\frac{1}{2}$ inch, but the thickness of the handle is out of all proportion. Depth 2 feet. (Pl. II, Fig. 1, No. 2.)
- (32) Bit of handle of a similar kind of pottery to the foregoing, but totally covered with engraved lines, which were originally also filled with white material. Depth 3 feet. (Pl. II, Fig. 1, No. 3.)
- (33) Fragment of a roughly made handle of very rude pottery, having particles of shells in it. The vessel must have been very large though its thickness was only $\frac{1}{2}$ inch. (Pl. II, Fig. 1, No. 9.)
- (34) Fragment of a well-modelled handle, of a type so far unique. The pottery is of a rather coarse texture though quite smooth on the outside. Its colour varies from a dark grey to buff. Depth 3 feet. (Pl. II, Fig. 1, No. 10.)
- (35) Fragment of handle, also of very fine make, the pottery being of much finer texture than the foregoing. Its thickness is about $\frac{1}{4}$ inch, depth 2 feet. (Pl. II, Fig. 1, No. 11.)
- (36) A fine bit of pottery which might have possibly been meant for a handle. Its colour consists of several shades of brown and grey and it bears a rather fine slip. Depth $2\frac{1}{2}$ feet. (Pl. III, Fig. 2.)
- (37) Five very fine sherds of a dark slate colour, having rather elaborate engraved designs. These are amongst the finest bits of pottery met with during the whole of the excavations. Depth varies from 2 to $3\frac{1}{2}$ feet. (Pl. II, Fig. 2, Nos. 1, 2, 3, 4 and 5.)

Other artefacts found in this layer consist in the following:—

- (1) A shell of *Cypraea lurida* (L.), bored at one end, having evidently been used as a pendant. Depth $2\frac{1}{2}$ feet. Such a shell is still used as a charm in Malta. (Pl. IV, Fig. 1, No. 1.)
- (2) A portion of the pereostome of a marine shell, having a groove cut in its middle part. It might, possibly, have been used as a button. (Pl. IV, Fig. 1, No. 2.)
- (3) A fossil cast of a sea date (*lithodomus*) bored at one end, having, obviously also served as a pendant. Depth $2\frac{1}{2}$ feet. (Pl. IV, Fig. 1, No. 3.)
(These casts are frequently met with in our coralline limestone.)
- (4) A bit of worked flint of a reddish-brown colour, found at the very bottom of this layer. (Pl. IV, Fig. 2, No. 2.)
- (5) A very well worked sling-stone, made of globigerina limestone. Depth $2\frac{1}{2}$ feet.
- (6) Another sling-stone made of the same stone but not so well worked. Depth 3 feet.

2nd Layer.—This layer varied in depth from 1 to 3 feet or more, and mainly consisted of a fine red soil. Several of the above-mentioned lenticular-shaped deposits were met with in this layer.

The organic remains found were the following:—

Mammalia.

Man.—A tooth found at a depth of about 4 feet from the surface (Pl. IV, Fig. 3, No. 1), as well as some phalanges found at various depths.

Deer.—Towards the left of this trench the bones of deer were more or less common, in other parts they were scarce.

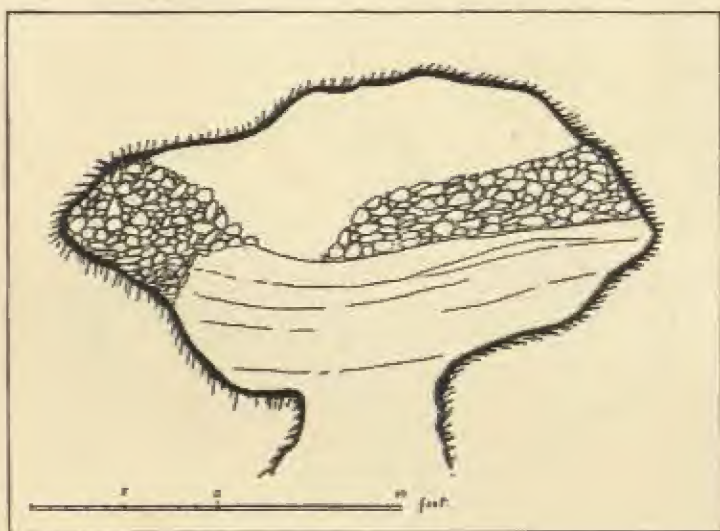


FIG. 2.—SECTION L.

Hippopotamus.—On the right-hand side of the cave at a rather high level and inside a moderately deep fissure (see Fig. 3, Section II) were found the bones which probably belonged to an entire leg of a hippopotamus. These bones are in a very good state of preservation, showing that they had not been rolled about in any way.

Vole.—Several bones, especially jaws, were found in one of the lenticular-shaped deposits. These remains belong to a new species which has been described by Miss Bate as *Arcicola melitensi* (see *Geological Magazine*, Vol. LVII, p. 209, May, 1920).

Aves.

Avian remains were met with at various depths; the greater part of these have not yet been identified, though some which were sent to the British Museum were declared by Miss Bate to belong to passerine birds (see *Geological Magazine*, Vol. LVII, p. 211).

Reptilia.

Toad.—A large number of bones which have been assigned by Dr. G. A. Boulanger, F.R.S., to the common toad (*Bufo vulgaris*) were found in a rather extensive lenticular-shaped deposit of red soil. They were particularly plentiful towards the left-hand side of the cavern.

Tortoises.—Some fragments of the carapace of *Lutremys europæa* were found in one of the pockets of dark-red soil above mentioned, at a depth of about $3\frac{1}{2}$ feet from surface. A plastron and a humerus of another chelonian were found in a different deposit at more or less the same depth.

No chelonians are found in a wild state at present in the Maltese islands, though specimens are imported and kept in confinement as pets.

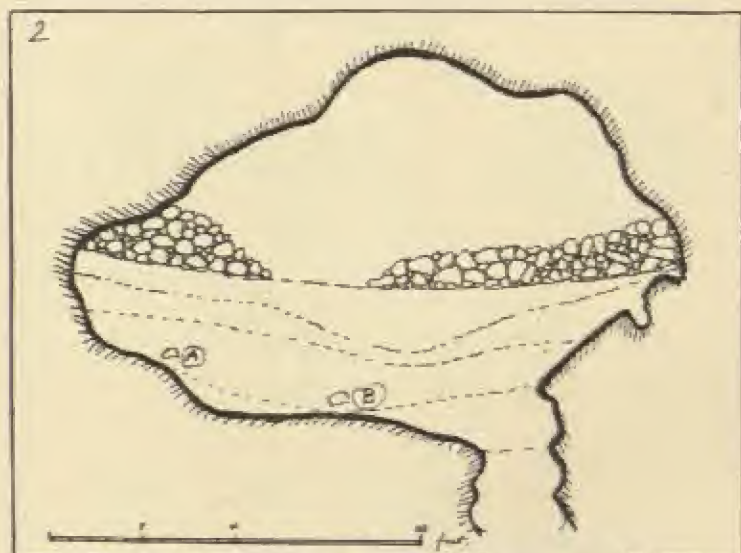


FIG. 3.—SECTION II.

Mollusca.

Iberus.—The variety *despottii*, C. Gatto, of this species of snail was very abundant in almost all the lenticular-shaped deposits.

Rumina.—Specimens of *R. decollata* were met with together with the foregoing.

Macularia vermiculata (Mull.).—Of this species only traces were noticed.

Towards the middle of this trench almost at the bottom of this layer (*i.e.* 4 feet from the original floor of the cave) several shells of *Iberus*, etc., were found having a stalagmitic coating.

Note.—As regards the toad, it is important to note that no species exists at the present day in the Maltese islands, notwithstanding the fact that *Bufo variabilis* is found on Lampedusa and *B. vulgaris* and *B. viridis* are both more or less common

in Sicily. I may also add that I have several times imported specimens of these batrachians, and though I have done my best to acclimatize them, they have never lived.

The artefacts in this layer consisted of the following :—

- (1) Two very roughly made sling-stones, found at a depth of about $4\frac{1}{2}$ feet from the surface.
- (2) A chert knife, $1\frac{1}{4}$ by $\frac{3}{4}$ inch, found almost at the same depth. (Pl. IV, Fig. 2, No. 1.)
- (3) A very well worked flint knife, 1 by $\frac{3}{4}$ inch. Its colour is partly yellow and partly red. Depth 4 feet from surface. (Pl. IV, Fig. 2, No. 3.)
- (4) A flake of stone, similar to flint, but more opaque and of a fine light red colour. Depth 4 feet. (Pl. IV, Fig. 2, No. 4.)

Besides these several neolithic sherds were obtained at depths which varied from 3 to 5 feet from the surface, but as the material where they were accumulated appeared to have been disturbed they were discarded.

3rd Layer.—This varied in depth from 2 to 4 feet and was also composed of a reddish soil which was of a pasty consistency. Both organic and inorganic remains found in it varied immensely in their distribution. Bits of stalactites and pebbles were very abundant, especially towards the inner part, whilst the soil in the part nearer to the entrance of the cavern was practically free from such material.

The organic remains consisted of the following :—

Mammalia.

Man.—Two teeth found in the centre part of the trench at a depth of about 6 feet. (Pl. IV, Fig. 3, Nos. 6 and 7.) The crown of one of them (an incisor), No. 7, is remarkably small and its root has a well-marked inward inclination.

A third tooth (Pl. IV, Fig. 3, No. 8) was found beneath a stalagmitic layer about $\frac{1}{2}$ inch thick, at a depth of about $5\frac{1}{2}$ feet from the surface. Its crown (a canine) appears to have been cut to give it a sharp pointed edge.

A fourth tooth (Pl. IV, Fig. 3, No. 9) was found at some distance from the others, whilst two more (Pl. IV, Fig. 3, Nos. 10 and 11) were picked up whilst digging over the chasm at a depth of about 6 feet from the surface (in 3rd layer).

An incisor (Pl. IV, Fig. 3, No. 12) was found at a depth of 6 feet, just beneath the smashed stalagmitic floor below the large stalagmite (*see* Fig. 4, Section III, A).

A metacarpal bone and a phalanx (Pl. IV, Fig. 4, Nos. 1 and 3) were picked up whilst digging at a depth of about 6 feet, but nearer to the entrance of the cave. These two bones are much less mineralized than any of the preceding, and are very light.

Hippopotamus.—Few, but very well preserved bones of *H. pentlandi* were met with at the very bottom of this layer, at a depth of 6 to 7 feet from the surface.

Elephant.—A very fine molar of *E. mnaidrensis* was found in what appeared to be another lenticular-shaped deposit of fine red earth at a depth of about 6 feet. This molar could not have been much rolled as its roots were quite sharp and almost complete. It is well mineralized, and both in colour and consistency is very similar to the globigerina limestone.

Deer.—Limb bones, teeth and bits of antlers were more or less abundant, especially towards the right-hand side of the cave. These remains belong to two distinct species of the genus.

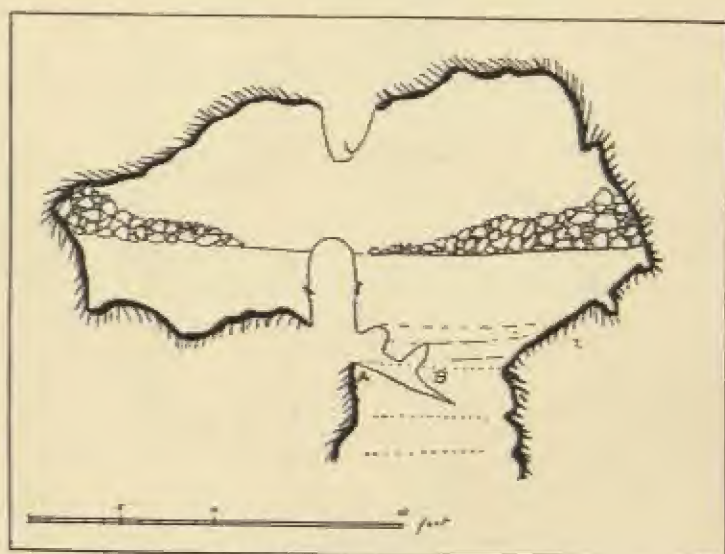


FIG. 4.—SECTION III.

The artefacts consisted in the following:—

- (1) A piece of lava, 5 by 4 by 1 inch, one side of which is very smooth showing that it had very probably been used as a grinder. It was picked up whilst digging at a depth of about 5 feet from the surface, to the left, in a deposit of red soil. (Section II, A, Fig. 3.)
- (2) A piece of globigerina limestone, 5 by 4 by $1\frac{1}{2}$ inch, very regularly shaped and showing signs of fire. Found at the bottom of this layer just above the rock shelf (at about 7 feet from the surface). (Vide Section II, B, Fig. 3.)

4th Layer.—This layer in some parts was as much as 3 feet deep, but sometimes it disappeared altogether.

The organic remains met with in it consisted of the following :—

Mammalia.

Hippopotamus.—Limb bones, molars and bits of tusks of these pachyderms were accumulated in fair quantities in various parts of this layer and were mostly in a very good state of preservation.

Elephant.—Bits of tusks were found in various parts. They were extremely friable so that they could not stand the gentlest handling.

Deer.—Bones of deer were only met with in the middle part of the trench and almost at the very bottom of this layer.

5th Layer.—This varied from the 4th layer chiefly in the great abundance of bones and teeth of Hippopotami and a number of molars of elephants. The latter species appear to be of much greater antiquity than any of the other remains, and all of them must have been carried for a very long distance before they were deposited here.

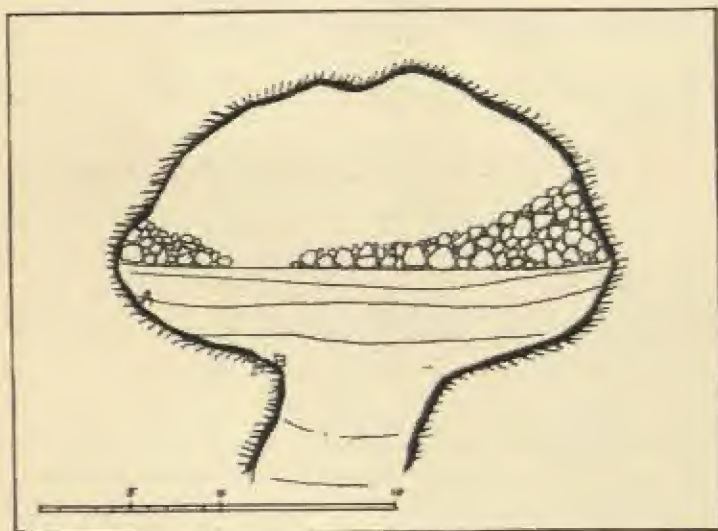


FIG. 5.—SECTION IV.

These remains vary greatly in colour, some being grey or yellowish, having blotches of darker shades. Others are of a bright ochre, whilst some are almost black. A number of them were found deposited in pockets of blue or yellowish clay.

The remains above described are only a small portion of what has been obtained from this trench ; a large quantity still remains to be examined.

THE OUTER TRENCH.

This trench, which is separated from the middle one by about 5 feet, is 30 feet long, having an average width of 27 feet. The strata vary considerably at a relatively short distance, and this may be seen from the portions of earth which have been left standing for the purpose.

The upper strata were not so rich in either animal remains or pottery as those of the middle trench, though some of the former are of great interest as they belong to species hitherto unrecorded either for Malta or for the cave.

The chasm in this part of the cavern runs generally almost at the centre (Section IV, Fig. 5). It is also much wider than in the middle trench. The rocks on the left-hand side are covered with a stalagmitic deposit which has percolated through the soil, thus some of the remains found here were adhering to each other, to other solid material, or to the rock itself.

The edge of the rock on the left side (Section IV, B, Fig. 5) has a peculiar gloss as if it had been smoothed down by a continuous friction. The superficial material in this part of the cave consisted of the usual rounded boulders, which in some parts were piled up against the sides of the cave to a height of 5 feet or more; the organic and inorganic remains amongst these boulders were also similar to those found with the superficial material of the middle trench.

The principal layers in this trench are five.

1st Layer.—Consisting of a compact red soil varying in depth from 6 inches to 1 foot, though at certain points it was as deep as 2 feet or even more. The following organic remains were found in this layer:—

Mammalia.

Man.—Two molars found at a depth of 1 and 1½ feet respectively.

Dog.—Bones of a dog found almost at the top of this layer. They appeared to be of a recent date.

Horse.—Many bones of the horse found both in this and in the second layer. It seems probable that these were not deposited simultaneously with the soil, and they did not show any sign of fossilization.

Sheep or goat.—Several bits of bones and teeth belonging to either or both found at the top of the layer, but though old were not mineralized.

Aves.

A few bits found at a depth of from 6 inches to 1 foot. These have not yet been identified.

Mollusca.

Rumina decollata (R.).—Shells of this species were very abundant in some parts of this layer but they appeared to be very scarce elsewhere.

Macularia vermiculata (Mull.).—The shells of this snail were met with all through the layer but they were more plentiful in those parts where the preceding species was most abundant. The greater part of the specimens belonged to the small form of the species and are very similar to those found abundantly on Filfola at the present day. A few are, however, of an exceptionally large size and are larger than any which can be found now living on any of the islands of the Maltese group.

The artefacts consisted of many potsherds, the more important of which were :—

- (1) A bit of well-baked pottery of a dark slate colour, having some lines incised on it which were filled with the usual white material. Depth 1 foot. (Pl. I, Fig. 2, No. 9.)
- (2) A sherd of grey colour, having a thin layer of ochre on the outside. The incisions on it are very coarse and the pottery is of a very rough texture having particles of shells in it. Depth $1\frac{1}{2}$ feet. (Pl. I, Fig. 2, No. 10.)
- (3) A bit of pottery of a much coarser texture than No. 2. The lines incised on it are, however, very regular. It also contains many particles of shells. Depth $1\frac{1}{2}$ feet. (Pl. I, Fig. 2, No. 11.)
- (2) A fragment of a handle of light red pottery, probably belonging to the Punic period. Depth 1 foot. (Pl. II, Fig. 1, No. 4.)

2nd Layer.—Varied in depth from 1 to $2\frac{1}{2}$ feet and consisted of a loose red soil with a good number of angular stones embedded in some parts of it.

The organic remains found in this layer were the following :—

Mammalia.

Man.—One molar. Depth about 2 feet.

Deer.—Few bones, mostly broken, and some teeth met with at various depths.

Mollusca.

Macularia vermiculata (Mull.).—Met with more or less frequently and mostly in fragments.

Rumina decollata (R.).—Commonly spread all through the layer.

Cyclostoma melitense (Sowb.).—Very sparingly met with at various depths. Not the slightest difference can be noticed in these specimens from those living at present in these islands. This is worth noticing, as in some of the pleistocene deposits of Malta the *Cyclostoma* met with is rather similar to the *C. sulcatum*.

Ostrea lamellosa (Brocc.).—One valve of this edible marine species was found at a depth of about $2\frac{1}{2}$ feet.

The artefacts consisted of two or three sling-stones and several potsherds belonging to both the Neolithic and Bronze Ages ; a number of these sherds are similar to those found in the neighbourhood of Borg in-Nadur. The only two bits which bear incisions are the following :—

- (1) A bit of a red and grey colour of a fine texture, bearing two well-incised parallel lines on it. Depth about $2\frac{1}{2}$ feet from surface. (Pl. I, Fig. 2, No. 8.)

- (2) A sherd of a very coarse texture, having particles of shells in it. Its colour is a dark slate and the lines incised on it are very rough. Depth 2 feet. (Pl. I, Fig. 2, No. 12.)

3rd Layer.—This layer varied in depth from 9 inches to $1\frac{1}{2}$ feet and consisted of a very fine red soil practically free from stones. Some boulders were, however, found embedded in the soil towards the inner part of the cave. Some deposits of whitish earth were also met with in this layer, varying in thickness from a few lines to over $\frac{1}{2}$ foot; in one part one of these deposits was almost 1 foot thick.

The organic remains found were the following :—

Mammalia.

Pig.—One molar, almost at the surface.

Horse.—Several teeth found at various depths.

Cow.—Few teeth, also found at various depths.

Aves.

A few avian remains, which have not yet been identified, were also found at different depths.

Mollusca.

The land shells consisted practically of the same species that were met with in the foregoing layer, but I failed to find a single specimen of the species discovered by Cooke in his sixth trench, which was situated in the same locality occupied by a part of the trench under review. Count Carnana Gatto, who accompanied Cooke during the latter's excavations, assures me that the species alluded to was found in the locality above referred to.

Tapes decussatus (Lin.).—A valve and some fragments at various depths.

Tritonium cutaceum (Von Sahl).—Some broken specimens and many fragments found at different depths.

It is important to note that this species which was then evidently common and was undoubtedly used as food, is at present one of the rarest species of marine molluscs met with in our sea.

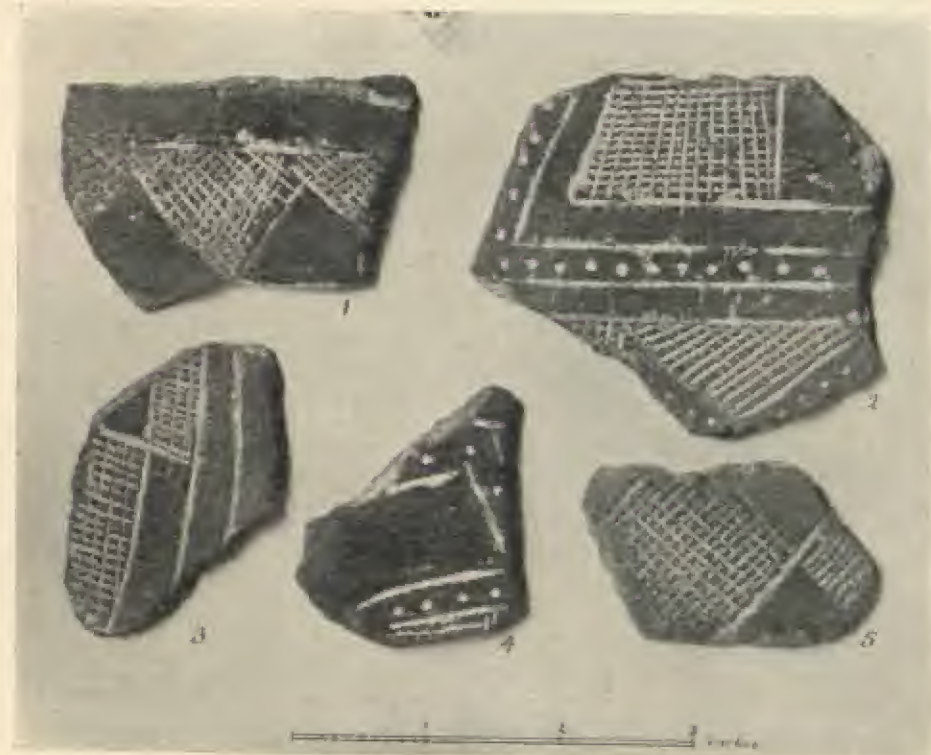
The artefacts consisted of Neolithic potsherds which do not merit special reference, some sling-stones and a piece of lava. Depth about 3 feet. The lava has three grooves cut on one side and was very probably used as a grinder.

4th Layer.—This varied in depth from 5 to 7 feet and consisted for the greater part of grey clayey earth, which in some parts was of the consistency of peat. In a part quite distinct from that where Cooke dug his sixth trench, the earth appeared to be displaced. I, therefore, discarded all the remains found in it.



FIGS. 1 AND 2.—POTTERY FRAGMENTS,

EXCAVATIONS AT GHAR DALAM (DALAM CAVE), MALTA.



FIGS. 1 AND 2.—POTTERY FRAGMENTS.

EXCAVATIONS AT GHAR DALAM (DALAM CAVE), MALTA.





FIG. 1.—POTTERY FRAGMENTS.



FIG. 2.

EXCAVATIONS AT GHAR DALAM (DALAM CAVE), MALTA.





FIG. 2. (See pp. 24, 27, 33.)



FIG. 4. (See p. 27.)

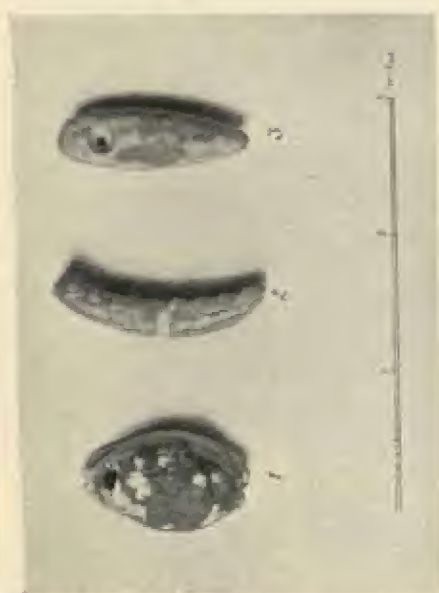


FIG. 1. (See p. 24.)



FIG. 3. (See pp. 25, 27.)



The organic remains collected from this layer were the following:—

Mammalia.

Man.—One tooth. Depth about 6 feet from surface.

Deer.—Bones, teeth, and antlers, belonging to two distinct species, met with almost all through the whole layer, but only common towards the right-hand side.

Fox (?)—Remains of a fox, consisting principally of jaws and teeth. Depth varying from $5\frac{1}{2}$ to 7 feet or more from surface. These remains probably belong also to two distinct species.

Wolf (?)—A part of a mandible with two molars in a very good state of preservation. Depth about 5 feet from surface.

Hippopotamus.—Some very well preserved bones, at various depths probably lying in their anatomical position.

Aves.

A few bones of birds, not yet identified, met with at various depths.

Mollusca.

Tritonium cutaceum (Von Salis).—Fragments at a depth of 5 to 6 feet from surface.

Murex trunculus (Lin.).—Few bits found with the foregoing.

Cerithium vulgatum (Brug.).—Three broken specimens. Depth 5 to $5\frac{1}{2}$ feet.

Cardium rusticum (Chemn.).—Fragments more or less frequent at top of layer.

Cardium tuberculatum (Lin.).—A broken valve. Depth about 6 feet.

Patella caerulea (Lin.).—A specimen found at a depth of about $6\frac{1}{2}$ feet.

All the above marine mollusca were evidently used as food, as they are still used in Malta, except the *T. cutaceum* which, as already stated, is now very rare, and the *C. tuberculatum* which is also very scarce.

The artefacts consisted of a piece of chert with very fine edges, which could have perhaps served as a scraper. (Pl. IV, Fig. 2, No. 5.) Depth 5 feet.

5th Layer.—This layer, of which only about $3\frac{1}{2}$ feet have been excavated, consists of a grey loamy earth, with many pebbles and rounded boulders embedded.

The organic remains found in it were:—

Mammalia.

Deer.—Only a few bones in a very fragmentary state, mostly at top of layer.

Hippopotamus.—Bones, molars and tusks were quite abundant and some parts of the layer were literally packed with them. Some of these remains were in a very good state of preservation, most of them were very highly mineralized and unquestionably of great antiquity. Many were found crushed, but all the fragments still lying in their proper position. I have not, however, been able to find out what really caused such pressure as to crush them.

Elephants.—The remains of elephants were, here, also relatively plentiful. They consisted chiefly of rounded fragments of molars, and appeared to be of still greater antiquity than the remains of the hippopotamus. Evidently these elephants' remains had been rolled about a great deal before they were deposited in the place where they were now found. Amongst them two distinct species can be distinguished.

Several cartloads of animal remains have been extracted from this trench. Some time is, therefore, required for these remains to be properly examined.

THE INNER TRENCH.

This is separated from the middle trench by about 5 feet. It is about 18 feet long, 30 feet wide, and its greatest depth about 10 feet.

A group of very fine stalagmites stand on a solid rock in the middle of the chasm.

The layers vary considerably and differ to a great extent, especially from those of the middle trench.

The principal are the following:—

1st Layer.—Red soil with quite a number of small stones embedded in it. Depth 1 to 2 feet.

The organic remains in it consisted of some very friable bones belonging to the same species of domestic animals met with in the other trenches, and fragments of bones of deer, which are quite mineralized.

The artefacts consisted in sherds belonging to periods ranging from the Bronze to Punic Ages. None are, however, worthy of special mention, except perhaps a handle made of very rude pottery. (Pl. III, Fig. 1, No. 7.) Towards the inner part of this trench some stalagmitic deposits ran almost all through the width of the layer.

2nd Layer.—Fine red soil, practically free from stones or other material. Depth $1\frac{1}{2}$ to $2\frac{1}{2}$ feet.

3rd Layer.—Same sort of red soil, but full of small lumps of clayey material. A fragment of a handle was found at a depth of about $2\frac{1}{2}$ feet in this layer. This fragment is of a very coarse pottery of a slate colour, bearing some symmetrical lines which as usual are filled with a white material. The handle must have belonged to a moderately large sized vessel. (Pl. II, Fig. 1, No. 8.) As in the first layer

several stalagmitic strata of various thickness ran in this layer, especially towards the inner part of the cave.

4th Layer.—This consisted also of fine red earth, $\frac{1}{2}$ to 1 foot deep. Bones, antlers, and teeth of deer were frequently met with, some lay in juxtaposition and adhering together by means of stalagmitic infiltrations.

5th Layer.—A compact clayey earth of reddish colour, $2\frac{1}{2}$ to 5 feet deep; very unprolific.

6th Layer.—Composed practically of the same sort of soil. Scattered remains of both deer and hippopotamus were found in it, the latter being very abundant in some parts towards the bottom.

Broken stalactitic pendants of various shapes lay scattered in several parts of this trench in relative abundance. Very curiously no land shells were found in any of the layers, and yet that part of the middle trench where land shells, especially *Iberus*, were found so abundantly, is situated very near.

Some of the statements made in this report may seem rather puzzling, but such riddles are frequently met with in this cave. The portions of cave earth which I have left standing and untouched in their original position can, however, bear me evidence and tell their own tale to future explorers of Ghar Dalam.

MAYA AND CHRISTIAN CHRONOLOGY.

By RICHARD C. E. LONG, B.A.

PROFESSOR S. G. MORLEY, in his book, *The Inscriptions at Copan* (Carnegie Institution of Washington, 1920), has very fully discussed the correlation of the Maya and Christian eras, and his able statement of the problems involved is very valuable even for those who do not accept his conclusion that 12-9-0-0-0 13 Ahau 8 Kankin fell sometime in A.D. 1536. Nearer than this his correlation does not go. The correlation suggested first by Bowditch and afterwards for other reasons by Capt. Joyce gives an agreement exact to the day and makes 13-2-13-3-1 9 Imix 19 Zip fall on 11th September, 1536. This will be called here the Bowditch system, as his paper was the earliest, and I have given evidence of its correctness in several papers in *Man*. The only other correlation worth considering is that derived from the Chronicle of Oxkutzcab making 11-16-0-0-0 13 Ahau 8 Xul fall between July, 1539, and July, 1540, and 11-15-17-0-0 12 Ahau 3 Yaxkin fall between July, 1536, and July, 1537.

Professor Morley admits that the evidence derived from all the sources is consistent with the Bowditch system as far as the katuns are concerned, and he confesses that he can neither explain the discrepancies in the tuns nor give a correlation exact to the day. His strongest argument against the Bowditch system is that there is a large preponderance of authorities to show that A.D. 1536 was a year 8 Canac as his system requires instead of 4 Kan as required by the Bowditch system. That difficulty was already shown by Dr. E. Seler (*Bulletin 28 of Bureau of American Ethnology*, p. 333), and it is that difficulty which it is the object of the present paper to remove. All dates in the Christian era are given here according to the Julian calendar, and the month days of the later Maya dates have been increased by 1 day, so as to conform to the Old Empire system.

The discrepancies in the various sources as to the correspondence of the Maya and Christian eras are so marked that after making allowance for possible carelessness of the Indians and for errors of subsequent copyists and translators, the impression is left that there was some deeper reason for the divergences. The explanation I offer is that they arise from the calculation of intercalary days. It is generally accepted that the Maya calendar was a shifting one with an unchangeable year of 365 days, and that in order to make the festivals fall at appropriate seasons the priests calculated at any given time what the error of the calendar was, and fixed the date of the festival accordingly, without disturbing the order of the shifting

calendar. Bowditch has shown instances in the inscriptions of apparent corrections of the calendar on the basis of 25 days for each Venus cycle of 104 years, and one day for every four years in the excess. Landa, on the other hand, states that the Maya year was 365 days and six hours in length, which implies a correction of one day for every four years, and there are reasons for supposing that this system was used, as well as the other in the Old Empire (*Man*, 1919, 20; 1921, 22). Indirectly Landa's account of the Maya months strongly supports the view that the correction was made without disturbing the shifting calendar. Unlike the Aztec, whose monthly festivals regularly fell on the last day of each month, the Maya in Landa's time had no fixed month day for festivals, and only three cases are given of any definite day of a month for a festival, namely, 1 Pop, 7 Zip and 16 Xul, while the festivals in Mol, Chen, Yax and Zac are stated to be on days designated by the priests. Regarding the making of new idols of wood, he says: "They had for this a particular time which was this month of Mol, or any other if the priest judged proper to change it." Nothing definite is stated as to the festivals in the other months, but such expressions as "on another day in the month of Mac" and "during the month Muan" seem to imply that they were on variable dates fixed by the priests. This state of affairs would be liable to cause just such confusion as we do find—one source might give a month date according to the shifting calendar, and another according to the corrected system, by which the actual celebration of the festivals was regulated, while the tonalamatl count and the count of tuns and katuns remained unchanged, so as to fall on the same days in both systems.

Now on the Bowditch correlation the 11th September, 1536, was equivalent to 13-2-13-3-1 9 Imix 19 Zip, and fell in a year 4 Kan, as stated in three of the sources. But nearly all the other sources make the year 1536 fall in a year 8 Caunc. Referring to the table in my paper (*Man*, 1918, 70), which is calculated for the shifting calendar, it appears that from the zero point of the Long Count 4 Ahau 8 Cumhu, 13th January, 3642 B.C. to 13-3-0-0-0 11 Ahau 8 Kayab, 6th June, 1543 A.D., is a distance of 5184 years. The intercalation needed for this distance on the Landa plan is 1296 days, and if we follow Bowditch in deducting all full years from the sum of intercalary days, we get by subtracting 1095 days (= 3 years) a remainder of 201 days, equal to 10-1 in Maya notation as the amount to be used in rectifying the calendar at that time. It seems probable that the Maya would prefer to use a number consisting of even uinals, so as not to disturb the count of day signs, and would neglect the odd kins. This gives us 10-0, so that, e.g. when 2 Zac came round in the shifting calendar it would in the corrected calendar be 2 Pop by counting back the 200 days by which the shifting calendar had gone too fast. Assuming, then, that all dates in the sources which agree with the Bowditch system are given according to the shifting calendar by which 4 Kan 2 Pop fell in 1536, then on that date the corrected first month of the year coincided not with Pop, but with the preceding Zac of the shifting calendar. But the 2 Zac which fell last before 4 Kan

2 Pop was 8 Cauac 2 Zac, and this gives us 8 Cauac as the year bearer according to the corrected system, and exactly agrees with the majority of the sources and with the Morley system. This change of 10-0 in the month reckoning would produce not only a displacement of 9 years in the calendar round dates of the year bearers (8 Cauac instead of 4 Kan), but also a displacement of 3-11-0 in the calendar round date of the day on which a katun or tun having the same day number would fall. So in the Bowditch system Katun 13 Ahau falls on 3 Zodz, but in the Morley system on 8 Kankin and the distance from 13 Ahau 3 Zodz to 13 Ahau 8 Kankin is 3-11-0. This explanation that the dates which agree with the Morley system are given according to the corrected dates of the month festivals exactly explains all the discrepancies both in the year bearers and the tuns between the two systems of correlation, and disposes of all difficulties except those in the Oxkutzcab chronicle. Here we find the year bearers coinciding with the same years A.D. as in the Morley system. The katuns are not mentioned, but the tuns are, and it states that Tun 13 Ahau (assumed to be also Katun 13 Ahau) fell on 8 Xul, instead of 8 Kankin, as is required by the Morley system. The distance in the calendar round from 13 Ahau 8 Kankin to 13 Ahau 8 Xul is 3-11-0. We therefore have the curious result that the katuns in the Oxkutzcab system are displaced in the calendar round from those in the Morley system by the same distance as the latter are from those in the Bowditch system. This displacement also involves the displacement of the years in the Christian era, in which the katuns fall. So Katun 13 Ahau in the Oxkutzcab system fell in 1539 or 1540, instead of 1536, according to the Morley system. I think the most probable explanation is that this displacement of the katuns and tuns arises from error. The Maya doubtless knew that the correction of 10-0 involved a displacement of 3-11-0 in the calendar round position of the katuns and tuns, and the writer of the Oxkutzcab chronicle seems to have erroneously made this displacement from a set of dates which were already corrected, but he did not also displace the year bearers by a further distance of nine years, as he ought to have done to be consistent. The error may well have been made by Don Juan Xiu, when on 29th May, 1685, as he records, he copied it from "characters called Anares." An incorrect calculation would be very natural so long after the native culture had been destroyed. In any case he made many obvious errors in the dates he gives. His date 10 (possibly meant for 18) Zip for the death of the water bringer is also an inconsistency, since it would agree with the Bowditch not the Morley system.

Professor Morley has demonstrated the impossibility of reconciling any correlation based on the Oxkutzcab chronicle with the Long Count. The same objection does not arise with the Bowditch correlation, even with regard to the new dates from Yucatan fixed in the Long Count by him. These are 11-12-8-13-4 (or 10-3-8-14-4) at Chichen Itza, 11-12-17-11-1 and 11-15-16-12-14 (or 12-8-16-4-14), both at Uxmal and 11-19-11-0-0 at Chichen Itza. All are consistent with the Bowditch system, except the date 11-12-17-11-1 at Uxmal, which is earlier than Katun 2 Ahau taken

to be 11-15-0-0-0 2 Ahau 8 Zac in the Bowditch system, which is the date of the first mention of Uxmal in the Books of Chilán Balam. Even if the city was only founded at that time, there might well be a mention of an earlier date. At Quirigua there is a date over 300 years before the earliest contemporaneous one there.

It is worthy of note that the above calculation for rectifying the calendar makes the corrected beginning of the year fall on the 2nd February, since according to Landa the 1st February fell on 1 Zac (no doubt of the shifting calendar). But Sahagún states that the first day of the Aztec year fell on 2nd February, or, according to Dr. Seler, the 12th February, allowing for the shift in the calendar (*Bull.* 28, p. 142), and the Cakchiquel year is also said to have commenced on 1st February. Probably the many conflicting statements as to the commencement of the Aztec year are similarly to be explained by the confusion between a corrected and an uncorrected calendar. What we are here concerned with is that the evidence indicates a remarkable agreement between the dates which all these peoples who had a calendar of common origin regarded as the true commencement of the year, and this agreement in itself corroborates the theory now put forward. The calculation from the commencement of the Long Count shows that this date was not merely borrowed in later times by the Maya from the Nahuatl tribes. There is, however, a further confirmation of the theory. Dr. Seler (*Bull.* 28, p. 22) has noted that the festival which Landa says was celebrated by the Maya in either Chen or Yax presents many features of a new year festival, but the foregoing theory precludes us from regarding it as a corrected date for the commencement of the year. According to Landa, the month Chen began on 23rd December, and Yax on 12th January. Now on referring to the table in *Man*, 1918, 70, it will be found that the normal date 4 Ahau 8 Cumhu fell on 13th January, 3642 B.C. As the Christian dates in the table and in Landa are in the Julian calendar, it follows that they fall on the same dates as the corrected Maya calendar dates would be by using Landa's value for the length of the Maya year, which is equal to the Julian year. Hence 1 Yax in the shifting calendar in Landa's time fell on the corrected date (or within a day of it) representing the anniversary of the zero point of the Long Count, and his statement that the festival was in either Chen or Yax exactly confirms this, because owing to the shift in the calendar it had for 80 years previously fallen in Chen, and was only then just shifting into Yax. It was evidently a day of very special importance when they "beheld the prophecies of the Bacabs," "and besides they renewed their idols of clay and their braziers, and if necessary they rebuilt the house or renovated it and placed upon the wall the memory of these things in their proper characters." The words I have italicized occur in the account of no other festival. What could be more likely than that they should commemorate the commencement of their chronology? We have other evidence also that the commencement of the Long Count was remembered in later times. In the Codex Tro-Cortesianus, which is evidently a late document, there is on pp. 34-37 the complete series of year bearers

commencing with 10 Cauac. So far as I know no explanation has been suggested why the series should begin with that year bearer. Now it appears from the only month date in the Codex 13 Ahau 13 Cumhu that the day signs fell on the same month days as in the Old Empire; therefore these year bearers must have each fallen on 2 Pop, and the first year bearer of the series must have been 10 Cauac 2 Pop. But the 2 Pop which occurred next after 4 Ahau 8 Cumhu fell on 10 Cauac, so there appears an excellent reason for that year bearer being chosen to begin the series—it would be a most natural plan to commence the year bearers from that which fell first after the commencement of the Long Count. It thus appears that the Maya not only took account of the corrected date of 1 Pop, the beginning of the calendar year, but also that of 4 Ahau 8 Cumhu, the beginning of their era, and this consistent result is a strong confirmation of the theory.

Before closing this paper it is well to deal with what Professor Morley styles the error of Bowditch and Joyce in making the katuns of the later Maya begin on the days from which they are named, instead of making them end on those days as he does. Thus on their system a Katun 13 Ahau would begin on 13-2-0-0-0 13 Ahau 3 Zodz, and the date 13-2-13-3-1 9 Imix 19 Zip would fall within that katun, while in the Morley system it would fall in Katun 11 Ahau, because the next katun ending is 13-3-0-0-0 11 Ahau 8 Kayab. I think the best explanation is found in what Professor M. P. Nilsson (*Primitive Time Reckoning*, London, 1920) calls the "pars pro toto" counting. He has very ably shown that early races tend to use concrete indications of time, and to reckon discontinuously by points of time, instead of lengths of time, *e.g.* so many harvests or sowings or snows, instead of so many years, giving a point of time marked by something concrete like the harvest, instead of the duration of time as we have in view in speaking of a year. Of course, if the points of time only occur once in each period, the counting of them serves just as well as counting the periods. The best example for the present discussion is the use of sabbath instead of week in the Society Islands—so many sabbaths instead of so many weeks. It is a striking fact that, though the Maya in their inscriptions of the Old Empire frequently fixed a single day (a point of time) so accurately that it could not occur again for 374,400 years, yet so far as we know they had no means of denoting a duration of time as we do when we say an event occurred in a certain month or year or century without specifying the exact point of time. No method appears by which they could state that an event occurred in a certain tun or katun or cycle. The Period-endings merely showed that so many cycles or katuns or tuns ended on such a day, again only giving the point of time when the periods ended, not the duration of them. The same is evidently the case in the Books of Chilán Balam, and explains why to denote a space of time extending over several katuns the practice was to mention the names of all the katuns occurring during that time, *i.e.* really to give the names of the days Ahau on which the katun markers were set up—the points of time marked by concrete things, not the duration.

Thus "6 Ahau the land of Chakanputun was seized; 4 Ahau 2 Ahau 13 Ahau 11 Ahau 9 Ahau 7 Ahau 5 Ahau 3 Ahau 1 Ahau 12 Ahau 10 Ahau 8 Ahau Chakanputun was abandoned." Now it is obvious here that Chakanputun was not abandoned till after the period-ending days 4 Ahau to 10 Ahau inclusive had passed, and it follows that 8 Ahau the last period-ending day had also passed before that event, and that the land of Chakanputun was seized some time after the period-ending day 6 Ahau and before 4 Ahau. Thus the Bowditch-Joyce way of naming the katuns is correct, though the Maya looked at it from a different point of view. So we have "Oxlahun Ahau cimci ahpula," "13 Ahau the water bringer died"; *i.e.* first there occurred the day 13 Ahau, on which the katun marker was set up, and afterwards occurred the death. So also the Oxkutzcab chronicle states "the Tun on 2 Yaxkin it was," etc., thus noting the day on which the tun marker was set up, just as it notes other events. This shows that the inscription on the Monjas at Uxmal on which Professor Morley chiefly relies for his contention is not a proof of it but merely another example of the *pars pro toto* reckoning. Here there is the calendar round date 5 Imix 19 Kankin followed by "18 tuns," and this is followed by "13 katuns." He rightly reads this as 11-12-17-11-1 5 Imix 19 Kankin, but this by no means proves, as he thinks, that either the tuns or katuns regarded as lengths of time were named from their ending days. The Maya sculptor did not name any lengths of time; he merely noted three points of time, the calendar round date and the two period endings, but as in this case he put the two latter last it means that they occurred after the calendar round date which is therefore fixed by reference to the following period endings, as in the Morley system, but here, too, the Maya looked at the matter differently, having points of time in view, not duration. In the Books of Chilán Balam, on the contrary, the period-ending days come first, so the events are dated by the period endings preceding them. Similarly when so many katuns or other periods are mentioned in the inscriptions of the Old Empire, it means that so many markers of such periods were set up. If three katun markers had been erected then three katuns must have elapsed, and this necessarily caused them to count by elapsed time, instead of current time. When counting by points of time, not lengths of time, there is no such thing as current time, but the elapsed time is duly recorded by the mention of the last point reached. We count by elapsed time only when telling the time of day, and then the absence of a means of expressing duration appears. We can say it is 2.30, giving the point of time, but it is not ordinary English to say it is in the third hour, and we can only say it is between 2 and 3 o'clock, thus reckoning from points as the Maya did.

NOTES ON THE KIPSIKIS OR LUMBWA TRIBE OF KENYA COLONY.

By JUXON BARTON.

[WITH PLATE V.]

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I.—INTRODUCTORY.

THE following incomplete notes upon the Kipsikis or Lumbwa were compiled during two periods of residence amongst the tribe—one of eleven months, one of five months—together with some experience of other cognate tribes of the Niloto-Hamitic group.

The tribe is usually known as the Lumbwa, a Masai term of opprobrium for a pastoral people who have taken to agriculture. The tribe use the name Kipsikis, as do the allied tribes, to denote themselves.

The people are an admixture of races; in the northern portion of their area, Belkut, there is a large proportion of Nandi; in the central portion, Buret, of Kisii, a Bantu tribe; in the south, Sotik, of Kisii and Dorobo. Throughout all three sections runs the Nandi strain in varying predominance.

It is thought that the tribe was formed, and now lives, on a migration route of pastoralists moving southwards; and that these pastoralists, having moved through Nandi and forming that tribe, met Bantu Kisii and later the hunting forest people of the Mau escarpments, miscalled Dorobo.

There is thus a pastoral infusion of an unknown race begetting Nandi and taking them with them in their movement, Bantu Kisii, and aboriginal Dorobo.

The constant references throughout this paper to Hollis' work on the Nandi suffice to show the Nandi relationship; in point of fact, an amount of the book relating to the Nandi was compiled on Kipsikis or Lumbwa evidence.

The unknown race of pastoralists cannot in all probability now be ascertained; they are probably the legendary people known as Sirikwa, who are thought to have lived in earth hollows with possibly a thatch or skin covering as roofing for themselves and their stock. These curious earth hollows are found on the Northern Trans Nzoia near Mount Elgon, on the Uashin Gishu Plateau, near the Elgeyu and Kamasia escarpments, in Nandi, and as far south as Sotik. There is record of a present-day tribe in Tanganyika Territory living in thatched hollows. It is thought that these early inhabitants are one and the same people as those who inhabited the stone kraals found on the Uashin Gishu Plateau, and that earth was used when stone was not available. Curiously these stone kraals are inhabited to this day by the Elgeyu, close physical, lingual and customary cousins of the Kipsikis. The name Sirikwa persists throughout the Niloto-Hamitic group in the Colony for this old race.

Stone bowls, a stone pestle and mortar, and digging stones (! *hwe*, as found in Cape Colony) have been found in Sotik at about 10 feet from the surface, and a digging stone of similar make on the extreme limits of the Northern Trans Nzoia; worked obsidian arrow-heads seem to have been general.

The internal evidence of the various tribes—the Nandi, the Suk or Pokwot, the Elgoi of Mount Elgon, the Marakwet, the Elgeyu, the Kamasia or Tuken, the Lumbwa or Kipsikis, and probably the Masai and Turkana—points to a common basis, probably Nilotic-pastoralist, with a secondary stratum of aboriginal, and it is suggested that the Nilotic influence predominates in cattle customs and the aboriginal in personal rites.

The Dorobo, a Masai misnomer denoting a tse-tse fly, who know themselves as Ogiek, speak to-day the dialect shared by all the allied tribes, save the Masai and Turkana, and do not seem to have spoken any other tongue. They are generally thought to be aboriginal; possibly they were, but if the antecedents of any one of this tribe are tested in the vicinity of the Niloto-Hamitic group it will be found that they can be traced to the Nandi or Kipsikis, and, with the latter, especially to Sotik. The sum total is that a poverty-stricken (in stock) Nandi or Kipsikis takes to a hunting-forest life, and is designated Dorobo, with the meaning of a poor fellow. The upshot is that there most probably was an aboriginal tribe which tintured the customs of the present-day tribes, formed by migrant pastoralists, and lost their identity in so doing.

Mention has been made of the Masai, and it is usually assumed that this tribe was a fine, pure-bred, fighting race, and for this view there is justification in the enormous herds and flocks held by them. If they were ever pure-bred, and it is against reason

to assume that they were, they are not so to-day, containing many members of the tribes of the Niloto-Hamitic group mentioned above and an ever-increasing and recent admixture of Bantu Akikuyu, which last influx may save them from extinction.

The Masai seem more Nilotic than Hamitic, and their most obvious congeners are the Turkana, an even more Nilotic tribe, who, if unhindered to-day, would also spread red ruin to all the tribes through whom they would pass in the southern search for that philosopher's stone—good grazing, and who would end as the Masai, exhausted by their forays finding their salvation in an influx of new blood.

II.—PHYSICAL AND PSYCHOLOGICAL.

As might be expected, the Kipsikis exhibit a variety of types of feature and form—the tall, handsome Hamite, the burly Nilotic, the prognathous and somewhat repellent Bantu, and the small nicely made hunter. The features of the women do not compare with those of the men either from a masculine or feminine standpoint. The hair of the head varies from Negro wool to the crinkly and finer hair of the Hamite. The feet are often pithecoïd and as often well-formed. The carriage of the young men and girls is erect and free.

The resistance to sickness is poor, especially when away from their own country.

Infant mortality is exceedingly high and seems due in the main to careless motherhood.

The women are not fertile, and children are desired.

The mentality is reasonably high, and seems to vary with the physical type; it is generally higher in the Hamitic type.

The men are brave and warlike and respond to discipline, the women long-suffering; both have great powers of endurance to bodily hurt and little to internal disease.

Affection is shown by a man to his mother, his lovers, and his sons, and a decreasing respect to his father.

There is often a firm regard for the European, and with most Europeans it is reciprocal.

Christian Missions have made some headway of recent years, but not to the extent they have progressed amongst the Bantu tribes of the Colony.

III.—PURSUITS.

Raiding, dancing, and to a less degree hunting, were the only proper pursuits of a young man; admiration, dancing, and a little house and garden work of a young girl; a moderately active part in raids, the clearing of ground for the housewife

to till, a great deal of talking, some drinking, and discussion concerning the ancestry and ownership of past and present cattle of a middle-aged man; hard and never-ending toil of a woman. Betrothals, marriages, circumcisions and deaths, and the respective rites of old people. It is still much the same.

To-day an incapability to recognize the ownership of stock by members of other tribes takes the place of raiding.

There is a present-day tendency to drinking amongst the youths; in former days this was forbidden to them as warriors.

Eleusine grain is largely grown, and maize of late years. The tree growths are cleared by the men, the ground is broken by the women, the whole is fenced by both men and women. The turves are burnt and then spread over the soil. Eleusine grain seems to require unbroken ground for each crop.

The care of stock and the lore concerning cattle is the main concern of the men, who milk the cattle, and did the present confines of the tribe allow, the aim of existence, a purely pastoral life, would probably be achieved.

Of recent years a large percentage of the men and youths have sought work for wages on European holdings, generally in connection with stock.

IV.—COUNTRY AND POPULATION.

The country is well-watered and hilly; it seems to have been largely forest at one time, but now, save in Sotik, is very poorly wooded. The general altitude is about 6000 feet above sea-level. The rainfall is heavy. Malarial fevers are almost unknown.

The area in the occupation of the tribe is approximately 1000 square miles; the density of population approximately 62·85 to the square mile, exceeded only by the Orange River Colony native reservation density in the Union of South Africa.

The total population (1920) is estimated at 71,091 souls, 62,853 in the Native Reserve, 8238 on neighbouring farms.

The war record of the tribe on active service is probably the best in the Colony in proportion to its numbers, 670 serving in the King's African Rifles, 1146 in the Supply and Transport Corps (Animal Transport) as waggoners and the like.

V.—DIVISIONS OF THE COUNTRY.

The country is divided into three counties (*emet*, pl. *emotinuck*):—

Belkut, in the north, so called from *bel* or *pel*, to brand, and *kut*, the mouth; the punishment in this area for theft was to slit the mouth of the thief.

Buret, in the centre, so called from an Elgeyu or Kamasia named Bureti who settled there.

Sotik, in the south, so called from a Bantu Kisii, of the neighbouring tribe, named Masoti, who established himself near Motigo Hill at a place called Soot. (Cf. Hollis, *The Nandi*, p. 4.)

VI.—DIVISIONS OF THE PEOPLE.

The Kipsikis do not live in geographical districts or divisions on a war-like basis as do the Nandi. The *porosiek* (sing., *puriet*) or warrior divisions are :—

- (1) Kongetuinion, the lions, members of this band associate themselves with the Kipkaigeh *puriet* in war. They are so called as they are said to have eaten a lion when famine-stricken on a raid.
- (2) Kipkaigeh, or Koilonget, the long shields. Members of this division are mainly of Dorobo blood and predominate in Sotik.

These two *porosiek* are known as Kamugagarek. Ngagarek is said to be the name of a former member.

- (3) Kasanet, rough shelters of branches, or Koterik, the reivers; the meaning being that it was a characteristic of this band to lie up in shelters in the forest and to dispossess returning raiders of their booty.
- (4) Kibeni, a white-sided ox, members of which definitely associate themselves with the Kasanet in war.

These two *porosiek* are known as Mweitan, the same name is used by a section of the Uasin Gishu Masai.

A man follows the *puriet* of his father; this is not the invariable rule, but when it is intended to pay a compliment a warrior is invited to join the *puriet* of his admirers. Again, a wise father to this day insists on his sons joining other *porosiek* to avoid the possibility of all being killed on one raid. When sorely pushed a man calls upon his *puriet*, "*Ab oñk up eñ Kipkaigeh*," "By the shades of my ancestors my ox is a Kipkaigeh," and the response is immediate; while the Kipsikis do not live in geographical *porosiek*, yet on one occasion, when a cry of a presumed Masai raid arose at 2 p.m., every *muren* (warrior) within a radius of 35 miles was on the scene of the raid by 8 p.m.

Each *puriet* has at its head a *kirowokindet*, or advisory leader, and under him are various "captains of bands of fifty."

When a raid is contemplated, two scouts (*sogoldiek* or *yotindek*) are sent some days ahead; these visit the area to be raided, arrange the plan of attack, plaster their shields with cow-dung from the villages to be raided, and bring back some handfuls of grass as earnest of their endeavours. A day before the raid some ten men re-survey the scene of action, and return towards the gathering place of the raiding *puriet*. The raiders set forth amidst a complexity of omens and prohibitions, e.g. no sexual connection may take place on a raid; to meet soldier ants when marching at night betokens a retreat at once; the cry of the *chepkugosiot* or *kiptildilian* bird immediately in front and immediately behind the raiders is a bad omen, and a bad

omen also when crying on the due left or right of the raiders, but a good omen when on the half-left or half-right; in actual conflict the appearance of the same birds on the right betokens victory, on the left defeat; the bushbuck (*poinet*) and the baboon (*moset*) are bad omens; likewise the snakes known as *erenet* and *ndaret* when on the path of the raiders. There is no legend of the *orkoiyot's* head accompanying raiders as with the Nandi; the *orkoiyot* is a recent self-imposed infliction upon the Kipsikis.

As the cattle are captured they are hurried to the rear and the action is closed as soon as possible.

After a successful homicide the killer washes his bloodstained spear, allows the water and blood to drip upon a handful of grass which he licks; there is no stated intention of partaking of the virility of the slain. On returning home the warrior arrives screaming the name of the tribe of which he has killed his man; the villagers come out to meet him and throw grass upon him; he goes far down the stream to bathe ceremonially, and plasters red earth (*ngariet*) on the right of his face, white earth (*ewartet*) on the left of his face; he draws red parallel lines criss-cross upon his right arm, right leg and on the right of his body, and similarly in white upon the left. The shield and spear are both half-plastered with red and white earth. He may not wash or oil his body now for a month, and if this is his first killing he must slaughter a white goat, on a second killing the colour is of no moment. The skin of this animal is given to a woman past child-birth to wear. A ring made from this skin is worn on the big finger of the right hand, with a strip extending to the wrist, where it is wound round as a bracelet. This form of ornament is also worn after other ceremonial slaughter of animals. Women and children may not eat of the leavings of his food, and women shun his presence until the month of seclusion is over.

This month being completed, the killer seeks a strange woman, especially one who is thought barren, and has connection with her, the husband, should he know (and if there is a child he must be told) shows no resentment; the next child born to the woman, if a male, is called Kipkoli (*kolit* = a white goat)—the name is fairly common. (Cf. Hollis, *The Nandi*, p. 4.)

VII.—SOCIAL DIVISIONS.

These are akin to similar Niloto-Hamitic tribes.

The male divisions are:—

<i>Ngetit</i>	..	..	..	..	A small boy, uncircumcised.
<i>Muren</i>	..	..	..	..	A warrior, after circumcision.
<i>Chongmiot</i>	..	..	..	..	A middle-aged man.
<i>Boyot</i>	..	..	..	..	An old man.

The female:—

<i>Chepta</i>	..	..	..	..	A girl, uncircumcised.
<i>Mureret</i>	..	..	..	..	A girl, after circumcision.
<i>Kapsiriconiot</i>	..	..	..	..	A middle-aged woman.
<i>Chebioset</i>	..	..	..	..	An old woman.

VIII.—GENEALOGICAL DIVISIONS.

The clan¹ is known as *oret*, the same word signifies a road or path, or *masigon*; children and captives follow the clan of the father or the captor. Members of the same clan may not intermarry or copulate.

While the clan tie should be the strongest after the immediate family group, it in no wise plays the prominent part noted by anthropologists in other parts of the world. It appears to be losing whatever hold it had upon the social life of the Kipsikis, and, indeed, the same may be said of most East African tribes. As for totemism, the word as defined by Sir J. G. Frazer² postulating an intimate and altogether special relation between the totem and the totemite, a superstitious respect, and a mutual beneficence cannot be said to apply to the association of the clan with an object amongst the Kipsikis; a relationship akin to totemism does exist but it is a playful relationship, rigid only when choosing a wife, without the strict sanctions and penalties attached to the cult elsewhere. There is perhaps some need for a word other than the Objibway "totem" to describe the African phenomena.

The following clans have been noted, the list being far from complete:—

- (1) Talai.³ Totem, *ngētunda*; members will kill the lion and eat its flesh, as do the rest of the tribe; its flesh is said to cause the eater to linger at his death and to gasp until a piece of lion's skin is put over his mouth. Women of this clan sing "*Talai piik ap kuton kamapelo?*" "Who can cook the kill of a lion?" a woman refusing a request with scorn says, "*Hio Talai*"; this form of interjection is used by the women of all clans, according to her clan.
- (2) Kiblegen. Totem, *cheblangat*, leopard. This clan in no wise protects the leopard, which has a short shrift when found by any of the tribe. "*Maris or nabai*," "The well-worn path of the cows with calf," is said of this clan, the idea being that this clan is rich and generous. The clan is said to have come from Nandi.
- (3) Kapsirere.⁴ Totem, *sireret*, hawk. This clan does not approve of killing the bird;⁴ the clan is called by women Kabeube, the snatchers, from the habit of the bird.
- (4) Pagoserek. Totem, —————, iron beads. The clan affect these beads. A clan of the same name is found with the Bantu Kisii, quite probably these people are migrants, the territories adjoin. Women of this clan may not wear cowries round the neck, but over the chest and under the left arm, as do the Kisii.

¹ It is regretted that the data on this subject is most incomplete, the reasons being that the Kipsikis are losing their clan organization, and that the subject was begun shortly before leaving the tribe.

² *Totemism and Exogamy*, 1910, p. 314.

³ The same clan name is found amongst the Nandi and the Suk.

⁴ The same totem is found amongst the Nandi and Suk.

- (5) Kibaiyek.¹ Totem, *mororoiet*, frog. This clan will not kill the frog. There is a widespread ill-omen amongst the Niloto-Hamitic tribes associated with killing the frog. The name of the clan is said to be an onomatopœic word. They are probably migrants from Nandi.
- (6) Kibasiso.¹ Totem, *asista*, sun. This clan is found amongst those Kipsikis who have Dorobo blood in their composition. The same clan or totem is found with the other tribes of this group.
- (7) Kapkugoiek. Totem, *saptet*, tree. Branches of this tree are cut and tied to the *mabwaita* shrine of members of this clan when a son is to be circumcised.² (Cf. Hollis, *The Nandi*, pp. 5-11.)

IX.—TRIBAL GOVERNMENT.

The three main geographical divisions of Belkut, Buret, and Sotik have been noted; these divisions subdivide into urban district areas, *koret*, and these into parishes, *kokuwet*. Each *koret* and *kokuwet* has its *kirowokinet* or spokesman, whose functions were mainly advisory, and who possessed no sanctions to enforce his orders, should he give any. Other than the rare meetings of the *kirowokik* there is no trace of a council, each *koret* being very much a law to itself; there was no offence, for instance, in the rape of a woman of another *koret*.

Apart from this organization there are the warrior bands, *pororosiek*, of which mention is made elsewhere.

A third form of government of little ethnological moment is the priest-kingship of the *Orkoiyot*; this is an infliction of the last fifty years, and the present would-be *Orkoiyot* is a cadet of the Nandi family. The brood of the *Orkoiyot* are regarded as a visitation by the tribe, and there is much feeling against them; unfortunately they find staunch supporters of their magico-religious status in the women, and the women of the tribe play as important a part in its life as elsewhere in Africa. It should be noted that the *Orkoiyot* strain hails from the family in Nandi, and that these are a Masai family of the L'Oisegella section; they seem to have established themselves in Nandi some two hundred years ago. (Cf. Hollis, *The Nandi*, pp. 48-52.)

X.—BIRTH.

A woman expecting a child takes the neck of a gourd, *katet ap sotet*, within which she seals a charm to guard against the ill-effects of proximity to a woman who has had mishaps in child-birth. Sexual intercourse between husband and wife ceases after the sixth month of pregnancy, and the abstention continues until the child can crawl.

At a birth the midwife, *kork' ap sikisis*, and a number of women assemble, the husband and children absent themselves. Parturition takes place in a sitting

¹ The same totem is found amongst the Nandi and Suk.

² Other clans are Kapkalwalek or Kapisokoep, Narajek, Kapikaon, Kiprikenek, Motoborik, Bakaserek, Kamaka or Kipindek, Kamaseka, Kapiparkesak, Kamosin, Bwaswetek, Kapitigo, Kapsangwek, Bubasik, Kapsason, Kiptepenek, Kipicheramik, Kipaep, Kamakorek.

position, the father is notified of the sex of his child by the *Jaset* song being sung four times if a boy, thrice if a girl. The placenta is buried in cow-dung in that part of the hut partitioned off for the goats, the umbilical cord is cut with the *lonyet* cattle-bleeding arrow and buried with the placenta. The mother remains in seclusion for four days if the child is a boy, three if a girl; for six days she may not cook any food for her husband, she may not use her hands in eating,¹ but uses a spoon of *segetiet*, rafia palm, and a plate of skin. At the end of this period she undergoes the *Lapat ap Eun*, washing of hands, a ceremonial washing of the hands and arms to the elbow. A supporting belt, *leyetio*, is worn by the mother. A nurse girl, *cheplakwet*, is usually employed. The father may not touch his child until it can walk, nor may any other circumcised male. A child is not weaned until it is about two years of age. (Cf. Hollis, *The Nandi*, pp. 64-66.)

The birth of twins is not inauspicious; one of the twins, if a male—and the Kipsikis persist that one is always a male—must be called *Simotetu* (*Ficus sp.*). The mother of twins from henceforth may only drink the milk and blood of the cattle which have been placed to her own use by her husband, and of no other cattle; this evidently betokens a life-long uncleanness. (Hollis, *The Nandi*, p. 68.)

Infanticide is common. Invariably the child of an unmarried, that is uncircumcised, girl is smothered by placing a cow-dung pad over the mouth of the child; this is done by the girl's mother, the reason given is that the child could not live because the clitoris has not been excised from the mother, and no argument will convince the people otherwise. The suggestion to an avaricious people that the father of the child should pay a fine of a cow to the girl's father may result in the abandonment of this custom. There is some trace of a custom whereby a barren woman takes the child of an unmarried mother as her own. The conservatism of the women is the chief bar to efforts directed against this form of infanticide.

Infanticide does occur when a child cries before it has a separate existence; it occurs when the child is delivered legs first, in this event the mother may only drink the milk of the cattle placed to her separate use; and again when the child is born with teeth, any child so born has the greatest difficulty in obtaining a mate in after life. Deformed children are not made away with, abortion is not practised, preventive measures are unknown, barrenness is a curse, but infant mortality ranges as high as 45 per cent. throughout the tribe, and is chiefly due to exposure to cold, and colic due to early part-feeding on half cooked meal. (Cf. Hollis, *The Nandi*, p. 68.)

XI.—NAMES.

When the mother is labouring, the names of ancestors of the father are called, and that called when the child is delivered is that of the child, this is the *kainet ap oik*. This name is, however, very little used, the substitute being one descriptive

¹ Compare the similar prohibition at circumcision and child-birth amongst the Kipsikis, Nandi, Suk, Kamasia, etc.

of the birth, born at dawn, born at harvest, and so forth; this is the family name. In its turn it falls into disuse, and the nickname given the child by its parents or playfellows becomes of general use, and continues in use by females towards the opposite sex even after circumcision. After circumcision a youth is known as *ar-ap Maina*, son of Maina, the father being *Maina ar-ap* ————. Young men refuse to state their *kainet*, or first name, partly from its childish associations, and partly it is thought from a desire not to impart anything of what is an essentially personal part of their being; the same idea being found in their horror of anyone, however friendly, obtaining their hair. Women refuse to mention the *kainet*, or first name, of their fathers or husbands, such is indeed a formula in the rare instances of divorce amongst the tribe, the reason being given that it is unseemly to call a man by the name used by his mother; there would seem to be a sexual idea underlying the prohibition. Men do not use their wives' names, but call them *kaita*, wife, or else a nickname, for the same reason. (Cf. Hollis, *The Nandi*, pp. 67, 68.)

XII.—CIRCUMCISION OF BOYS.

The appropriate time for circumcision is said to be when there is plenty in the land. The novices vary in age from 5 to 15 years; they themselves seek the agreement of their fathers, and an arrangement is made with a friend of the family, henceforth known as *pamungo* to the candidate, to supply the candidate with food during his seclusion; the wife of this man, on whom the duties really fall, is known by her *protégé* as *koruchon*.¹ The supply of food is subsequently recompensed by the payment of a goat or the like.

Circumcision is not of large batches at one time at one *menjit*,² or circumcision house, but of a convenient number generally of the same *korot*, or district. There is some reason to suppose that originally the rites were performed upon large batches, as the circumcised fall into the same age grade throughout the country.

Shortly before the ceremonies begin, two *moterenik*,³ or sponsors, to each *menjit* house are appointed by those who have undertaken the duties of *pamungo* to the *tarusiek*, or novices. The *moterenik* are feed⁴ officials, of senior and junior rank, and apart from their ceremonial duties they must serve the initiates with the food provided by the *pamungo*.

Withies and grass having been cut by the initiates they proceed to build the *menjit* house, which is located in the bush and away from inhabited houses.

The ceremonies begin with the full moon; an amount of stinging nettles, *siek*,⁵ is cut by the *moterenik*, and is placed in readiness in a conveniently large hut situated near the site of the ceremonial *menjit* house.

¹ This is the term used by a grown youth or man for his own mother.

² The meaning of *menjit* is obscure; the word is not used for any other building. The same word is used by the Nandi, Kamasia, Elgeyu, and with the Suk the word *menja*.

³ The same are found with the cognate tribes.

⁴ The fee in 1921 was half a rupee; the last lustrum it was a rupee, and before that a hoe.

⁵ The nettles are allied to the English species; they, however, give a much more severe sting.

The initiates obtain one of their mother's leathern skirts, which they fasten around their bodies from the chest downwards, also her beads, and similar ornaments from their girl friends. The head of the initiate is encircled by a band of *senendet*¹ grass, which is generally worn by his father and mother and other relations at this time, the same grass is worn in the pierced ears. No strong purge is given before the commencement of the ceremonies as with the Nandi; rancid butter is poured over the head and body of the candidate by his maternal uncle.²

A large party of men, women, youths, girls and children collect. The mothers of the novices carry wands of *korosiek*, i.e. withies bound with *senendet* grass; these are afterwards laid on the roofs of the mothers' huts if their sons are reported to have undergone the operation without fear. This gathering takes place in the neighbourhood of the *menjit* house at evening, and the *Chepkotilet* dance takes place—this is a circling of *murenik*, warriors, slowly tip-tapping and holding their spears or sticks at the cant, every now and then slowly twisting them in their hands, and humming a somewhat Gregorian chant, *ooh* (high), *ooh* (low); at times one will call the others by name and adding his *kokwet*, or parish. There is no song of words, save one perhaps notable exception:—

“*Aiyuet*³ *mechepak kita nego konget kongeror*,” which may be freely translated:

“The axe never ceases its work, others (youths) follow on.”

In the centre of the circle some youths hold a shield horizontally which is beaten with sticks.

About 10 p.m. the dance breaks up, women, girls and non-initiates are ushered away. The novices are taken apart by the *moterenik* in a somewhat mysterious fashion and are told to gaze at the stars;⁴ the *moterenik* suddenly ask, “What are those (stars)?” and often a startled incorrect reply is given. There seems to be no reason in this, other than the bewilderment of the candidates. This concluded, the *moterenik* takes the youths to the hut in which they undergo the first degree, this is not the *menjit* hut. They divest themselves of all clothing and ornament, as do the *moterenik*, the senior of whom precedes the line entering the hut, the junior bringing up the rear. The hut is full of old men and warriors; each candidate is asked in turn

¹ *Senendet* grass. This is a luxuriant fodder known to agriculture as Kikuyu grass.

² The maternal uncle is always called *mama* by the tribe and other similar tribes; with the Kipsikis the mother is called *to* by a child, *koruchim* by a grown son or daughter.

³ *Aiyuet*. Hollis, *The Nandi*, p. 53, gives this as the name of the dance, it means an axe. A similar scanty mention of the axe is made in the Suk ceremonies, and with the Kamasia in all probability. There is perhaps a sufficient suspicion to hazard the conjecture that circumcision and iron-working originated in Eastern Africa with one people, and further that the originators were the shy, forest-dwelling people known as the Dorobo, that is, members of the aboriginal stratum in Africa of which the Pigmy and Bushman are relicts. The circumcisor of the Masai must be a Dorobo. The word Dorobo, like so many tribal names in East Africa, is a misnomer, the people know themselves as Ogiot, pl. Okiek. (Cf. Merker, *Die Masai*, p. 62.)

⁴ No trace of star worship has been noted.

the names of all present, and all the initiates are beaten¹ on the head and body, particularly the pubes, with the *siek* nettles, which cause an intolerable temporary rash. They are told that the *majaita* pick² is ready heated in the fire, this is an euphemism for the circumcision knife, *rotwet*.³ An elder, with a skin robe drawn over his face and body, sits somewhat apart in the hut, on his head he wears a baboon-skin covering. One by one the candidates are led up to him, and asked by those present whether they have ever had connection with a married woman, they are enjoined to answer truly; the answer being given, they are ushered outside by the *moterenik* to whom they must divulge the name of the woman and her husband; the *moterenik* enjoin them not to give the woman's name on their return to the hut. All return to the hut and are again led up to the fur-clad elder, and are instructed to clasp his shins in turn; unknown to the initiates a small hole filled with water has been dug and a stick inserted, this is clasped between the feet of the elder. A sound⁴ results which they are asked to describe, and if this is done correctly, and a denial has been given to the first question asked, they are subjected to an amount of cross-examination by all present, and an endeavour is made to ascertain the woman's name, which is not divulged.

Next, the mechanism of the trick is explained by the fur-clad elder, who is known as *Arap Kimos*,⁵ and who is said to have a relationship with a mythical bird who provides him with the news of the countryside. This ends the first day.

So far the ceremonies seem to indicate a return to a pre-natal condition by the mother's skirt being worn over the body, a test of fortitude when the "anæsthetic" is administered, and a test of integrity and secrecy in the matter of sexual relations with married women.

The candidates are told to sleep until morning, when they will be "eaten"⁶ by something; at 5 a.m. they are taken by the *moterenik* to the vicinity of the *menjit* house, they discard their borrowed clothes a second time, and stand in a line facing the rising sun in order of seniority, which is dictated by the priority of their fathers *ipinda*, or age grade.

An elder, the *boyot ap tum(do)*, passes along the line from senior to junior, draws forward the foreskins of the novices and makes a small cut with the *rotwet* indicative of the place of the actual cutting; the candidates sit down facing their

¹ The reason for the use of these nettles is to benumb the body, it is intended to be an anæsthetic.

² *Majaita* pick. This is a somewhat fearful implement used to dig rock salt for cattle.

³ *Rotwet*. This means any knife; there is no special term for the circumcision knife. With the Nandi Hollis states the word *kipo* is used, its meaning is "bald temples."

⁴ *Sonitus vaginæ in coito*.

⁵ Cf. *Kimsoop* with the Nandi at the same ceremony.

⁶ "Eaten." The word has a meaning similar to that used of the Zulu *impis* who "ate up" their enemies.

fathers and circumcised male relatives, who cuff them on signs of cowardice; the circumcisors, chosen as being specially expert, pull forward the foreskin and cut it off,¹ it is thrown aside; the glans penis is pulled forward, the outer skin of the penis is pressed back and the tissue beneath this outer skin is pared away; the outer skin is then brought forward and fastened beneath by two thorns, *kigoronet*, piercing the outer skin from the right and left.

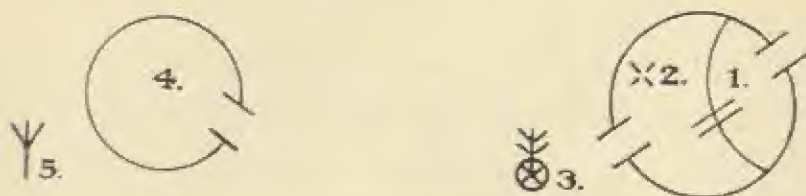
The operation is attended by severe pain, and often by suppuration, in time the thorn needles rot away. Circumcision takes place at sunrise. A barren woman may be present.

Immediately afterwards food is brought by the wife of the *pamungo* of each novice, this is a thin gruel made of eleusine grain, *musarek*, which has been cooked three days before; the women place the food at a distance, whence it is fetched by the *moterenik*; it is lapped out of a string bag, *kesiet*, the novice may not use his hands.² At midday, mixed blood and milk is brought for the candidates to drink; at four o'clock a porridge of eleusine grain, *kimoiek*, which is eaten from the leaves of the wild banana, *sasurek* (*Musa ensete*), without the hands.

For the following month hands may not be used in eating; the food consists of porridge, milk, meat, and blood, and is conveyed to the mouth by a half calabash.

Shortly after four o'clock on the day of circumcision, the initiates enter the *menjit* hut for the first time with the *moterenik*, who sleep with them until the end of the ceremonial seclusion, the novices in rows from senior to junior, the *moterenik* on rough beds.

The following is a rough plan of the *menjit* house and enclosures:—



- (1) *Tonnet* ENCLOSURE; (2) FIRE; (3) *Mabwita* SHRINE; (4) *Roborica* HUT, USED AS AN EATING-HOUSE AND WARDROBE FOR THE CEREMONIAL HEADDRESSES; (5) *Sebetiet*, A FORKED STICK HOLDING AN OLD CALABASH.

¹ This is done in Setik, but in Belkut and Buret and incision is made, through which the glans penis is forced, the resulting pucker of skin is pared off; this is similar to the Nandi practice. With the Akikuyu, Meru and Masai the pucker is left. *Annals of Archaeology and Anthropology*, vol. vii, Seligman states one of the slate palettes recording the victories of the proto-dynastic Egyptians shows that the conquered, a race with woolly hair, practised the form of circumcision still in vogue amongst the Masai. (G. W. Murray, "The Nilotic Languages," *Journ. Roy. Anthropol. Inst.*, Vol. L, p. 327.)

² As with the Nandi, Suk, etc., and also with the women of those tribes after child-birth.

The huts are of withies with grass roofs, and are of somewhat ramshackle construction.

For the first month the initiates remain in the *menjit* hut, leaving only for the purposes of nature; the *muren* visit them at intervals making booming noises with bull-roarers and frightening them with stories of the animals said to produce these noises. At the end of this month comes the ceremonial *Lapat ap Eun*,¹ washing of hands; a number of elders and warriors collect, bringing with them an amount of *siek* nettles. The novices are kept inside the *menjit* hut, their clothes are taken from them, and singly in the precedence of their fathers' age grades, they proceed outside and are beaten² on the face with the nettles, the rash closing their eyes. A cattle trough of a hollowed tree, *moinget*, has been brought by the elders; in it has been placed³ an axe, *aiyuet*, an agricultural knife, *morut*, a salt pick, *majaita*, a hoe, *mukombet*, grass, and the berries of the solanum fruit,⁴ *tugablubot*. A man lies in the trough, the skin garments of the novices are taken by the *moterenik* and placed so as to cover the trough and its contents.

The initiates are asked in the order of seniority of paternal age grades what is the meaning of the trough, they reply that they are ignorant; the man who has been secreted in the *moinget* shakes the skins above him and makes a noise representing a leopard's grunt, the *moterenik* assures the boys that the beast is very fierce, he urges them to take their clothing, as they timidly advance he thinks better of it and orders them to return, they are then taken aside and the hidden man emerges; on their return they take their garments and are questioned as to the names of the articles in the trough, the leopard's grunt remaining a mystery. Next, the novices clothe themselves, the *moterenik* bring water and their hands and arms are washed to the shoulder; the *moinget* trough is cleansed and its contents taken away, it is then filled with a large quantity of gruel, all must be supped from the trough by the boys who may not use their hands. Shortly afterwards a thick porridge of elusine grain is brought and placed on an ox hide to cool, it solidifies and is cut into as many portions as there are initiates, this is also put in the trough whence it is eaten with the hands.

The *Lapat ap Eun* ceremony being concluded the initiates are allowed greater freedom by the *moterenik*; they now cut their own firewood and draw their own water; their food is, however, still brought them by their *moterenik*.

¹ This is found with all the cognate Niloto-Hamitic tribes in East Africa.

² Apparently the use of nettles here is not as an anæsthetic but to cause temporary blindness.

³ The trough and its contents all seem to signify the necessities of well-being, human and animal.

⁴ The solanum berry needs special mention; it is literally the curse of the country, covering, as it does, all cultivation new and old. It is by far the most noticeable growth found. The berries are used in many ceremonies by the tribe, as amongst the Nandi, and undoubtedly signify plenty.

At the beginning of the third month the boys cut withies, *chagiek*, which they place near the *menjit* hut. The elders and warriors collect for the *Mainrek ap Tum(do)*, the beer festival; the beer is made from eleusine grain and is brought outside the *menjit* where the bowls, *loiyyet*, are set in the ground near the *mabwaila* shrine; hot water is brought from the *menjit* hut and added to the brew. The *boyot ap tum(do)* takes a mouthful of the beer, goes into the *menjit* hut and spits a little at each of the novices. The withies are now used by the *moterenik* and novices, *tarusiek*, to build the *tomnet* enclosure¹ within the *menjit* hut; fastened to the roof of this enclosure are three balls of grass and a small bundle of twigs, with these, when their seclusion is ended, the *tarusiek* burn the *menjit*. The *moterenik*, with the boys, go and lie down in the *tomnet* enclosure. The elders hold high revel outside and as many as are capable at the end of their drinking visit the initiates and charge them that they may now visit their relatives, that they may not look on unmarried women until they finally leave their seclusion, that they must avoid such, speak in a low voice, may eat all food, may speak with girls, may not steal, may never attempt witchcraft, may, when their seclusion is ended, force a woman or a girl to lie with them, that later they will undergo a further ceremony, the *Eit ap Kirowek*, of the staff, and may never divulge the secrets of the rites to women, the uncircumcised, and strangers. Many other admonitions are added as they occur to the speakers.

Now with permission from the *moterenik*, and it is grudgingly given, they may sleep away from the *menjit* house.

The fourth month begins with beer-drinking by the elders at night time; the following morning at about four o'clock the initiates are taken to the river, where a dam has been made and a small hut built in the water, of withies and grass; this has two doors, and the novices, preceded by the senior of the *moterenik* in order of their seniority, enter the water and pass through the booth, *Kaiyyet*, which gives the name to this day. A quantity of the solanum berries is placed in a long line, and the *tarusiek* are told to scramble for them; the *moterenik* count the spoils of each as an augury of the boy's future herds of stock. Wands of the solanum bush are cut by the *moterenik*, two to each novice; they have with them their bows and bird-arrows, which are held in the right hand with one solanum wand, the other wand is held in the left hand. The novices are told to go forthwith and to seek out a woman or a girl upon whom to thrust their "uncleanness"; this is done by touching her with the left-hand wand, which is then thrown away into the bush; the solanum wands are now called *motolik*.

When this has been accomplished the initiates meet at the *menjit* house, and those who have failed in their quest eat apart and sleep in the *tomnet*.

¹ A similar enclosure is found in the Suk *menjo*, and probably with the Nandi. It should be the site of further ceremonies or contain a fictitious fierce beast, but with the Kipsikis it does not; possibly the idea is that after the ceremonial cleansing the novices enter upon a new life and cast off old associations and habitation.

enclosure; they must enter the *menjit* by the back door until they have been successful.

During the fifth month there is more freedom of movement.

The sixth month, *Nget'unatet*, is ushered in by a beer-drinking of the elders; two cow horns filled with rancid butter are brought for each candidate. The novices go to their mother's huts, and without speaking to her obtain her bead embroidered skirt, and her ornaments. They return to the vicinity of the hut of their *pamungo*, and find that a gate-fence has been erected on the path near by. The novice stands on one side of the barrier, his sister or girl friend on the other. The gate is opened by the girl, and if she does not give the initiate a present of beads he retires and refuses to pass through. This is known as *Oiyotwa Oret*, the opening of the path. The initiates (there are generally several to each *pamungo*) fall into line near the *mabwaila* shrine of the *pamungo*, and the *moterenik* anoint their heads with butter from the cow horns, which is thence daubed over the body.

During the whole of this ceremony the novices wear their mother's clothing and ornaments, these they now discard and don the piece of cotton cloth which they have obtained from her.

The novice returns home, still not speaking to his mother, and for three days lives in dumb seclusion in her hut. The fourth day he seats himself near the *mabwaila* shrine, and either his father or his mother approach to shave his head; still keeping silence he refuses to allow this until he is given a goat, the garb which he has borrowed from his mother is placed near the *mabwaila* shrine, whence she takes it. The novice has with him a wand he has whittled and decorated, known as *kosisitiet*, the father asks for it, the son refuses until he receives a present, the father then takes it and places it on the roof above the goat's compartment in the hut.

For some twenty to twenty-five days the youth continues to hold no speech with women; after this period he has connection with a girl or woman; if she is unwilling, by tribal custom he may use force. He may never marry or have connection with her again, and there is a trace of a ceremonial avoidance between them, not so strong, however, as that with the woman whom he has touched with his *motolik* wand earlier in the rites.

The novice is now a *muren*, and is known as *ar-ap*———, the son of

During their seclusion the initiates wear a peculiar headdress, *kuinet*,¹ with a mask attached, which is chequered red, black and white; the upper part of the headdress is ornamented with the feathers of various birds shot by the initiate during his seclusion, the whole is made of *masiek* grass. The skirt of the mother

¹ A photograph of this is found in Hollis, *The Nandi*, p. 54, where it is called *kimarangachet*, the chequered one, which with the Kipsikis is a woman's name for an initiate boy.

is worn as a body covering and sewn at the sides; over the pudenda and over the skirt garment is worn a belt with a chequered pad, *osick*, similar to that worn by small girls. Brass, iron, and other bangles may not be worn, save a wristlet of *segutiet*¹ grass, called *chepkamamet*, dyed red with the juice of the *Chesolet* tree. The headdress is not worn in Sotik, where *masick* grass is not found.

Such ceremonies seem to defy analysis, and the wonder is that the native mind conceives such complexities. They are not "ritual" in the sense in which that word is used of Melanesian society, the only stable ideas which run through the whole seem to be a putting off of the old and on of the new, a test of endurance, and perhaps a re-birth. A curious permission given to a barren woman to be present at these ceremonies in order to make her fruitful bears out this last suggestion.

The origin of the rite as practised in East Africa seems to be due to two factors: an obvious factor is the Eastern immigrant from Arabia, who brought it as he formed the Somal race with the far-flung Galla; from the Somal it spread to certain of the Galla, or Oromo, but by no means to all, those furthest from Semitic influence do not follow the custom. The Boran, a Galla branch further westward, observe a like negation, still further west the Nilotic tribes are uncircumcised, save in contact with Islam. This Eastern influence was Semitic, it is now Islamic; it does not seem to affect in any way the Masai-Nandi-Kipsikis-Suk-Kamasia-Elgeyu group of Niloto-Hamites even to-day, or ever to have influenced them.

The other and possibly real factor is, it is submitted, that aboriginal stratum found in dwindling remnants on the escarpments and highlands of Eastern Africa from Mount Elgon to Mount Kilimanjaro and further south, known as Dorobo, aboriginal not only in physical measurements but in all tribal legends, probably to be classed with the Congo Pygmy and the Cape Bushman, speaking the same dialect as the tribe under review, and intermarrying with them. The Nandi legend is that a man living at Chemagal, a place not in Nandi, and in the forest-clad escarpments, finding that his children died successively determined to avert this in future, and circumcised his remaining son and daughter, migrated to Nandi, prospered exceedingly, and the custom became general.

The facts are that a migration of Nilotic pastoralists took place probably from Nubia, that these to avoid the tse-tse fly of the Nile, and for reasons of grazing, went south-westward, and found the walls of the Great Rift Valley barring the way, and peopled by an aboriginal hunting race. Here and there are passes, and obvious ones lead to the areas now occupied by the Suk, the Nandi, the Kipsikis and their like, and another into Masai country; contact with these aboriginals meant either war or

¹ A very lush grazing grass.

amalgamation to some extent—it was probably amalgamation—and so intermarriage and the formation of new tribes. There is thus a meeting between a race who do not follow circumcision and a people which might at that time have practised the custom as they do now, nothing more; but with the Masai, who followed a more western route, the floor of the valley itself, and who regard the Dorobo as an outcast, the circumcisor at their elaborate, lengthy, and important ceremonies must be a Dorobo, an outcast. As this is so with the Masai the hypothesis becomes even more reasonable with the Nandi, Kipsikis, and their congeners, as with them the Dorobo, while he still prefers his forests, is not an outcast, and in point of fact scarce a Nandi or a Kipsikis is without Dorobo blood.

With the Kipsikis circumcision always begins in Sotik, in the forest-clad foot-hills of the Mau, where approximately 80 per cent. of the people are of Dorobo blood.

No adequate reason for the practise of circumcision is given save a blank incredulity that the question should be asked, and if pressed, some such answer as: "Would you have us as the *Lemek* (Kavirondo)," or "It is the custom"; those who have come in contact with missionary influence follow the rite which they perform themselves without the ceremonies described, as do their women; their method is not favoured by the tribe. (*Cf. Hollis, The Nandi*, pp. 52-57.)

XIII.—CIRCUMCISION AGE GRADES, MEN.

These partake of the nature of a social division; it is impossible, for instance, for a man to marry a woman whose male compeers are of a senior age grade to his own, and a nominal respect is paid to the senior grades.

The nomenclature of the ages is notable. The same names occur with slight variations amongst the Nandi, Suk, Elgeyu, Elgoin, Chebleng, Kamasia, and Kipsikis, all of Niloto-Hamitic strain, but not with the more pronounced Niloto-Hamitic Massi. There is no doubt that several of the racial factors composing the tribes mentioned are shared with the Masai, there is also no doubt that there is one constant factor found throughout the first-mentioned tribes which is not present in the Masai. The former still live upon high hills and in the forests and manifestly this was their original state; there is and has been for many years a natural and marked tendency to adopt a pastoral life and to avoid the starved condition of hill-men and forest-dwellers, and a very real appreciation of the solution of the problem of existence which the possession of herds and flocks gives in Africa, and it is obvious that their present semi-pastoral state was not their original state. As might be expected, a similar nomenclature is found amongst the Dorobo, hill and forest-dwelling hunters.

The following age grades are noted by Hollis with the Nandi, and Dobbs with the Kipsikis;¹ the third column contains those noted in writing this paper:—

Nandi.	Kipsikis.	Kipsikis.
	1. <i>Maina</i> (1856), the meaning and origin of this word is not known, it is a common name amongst the tribe.	
	2. <i>Chuma</i> (1861), the same remarks apply.	
	3. <i>Sowee</i> (1866), a very few old men are still alive (1918); this would make them 64 to 67 years of age.	1. <i>Sowee</i> (1866).
1. <i>Juma</i> (1870) ...	4. <i>Kiptaimen</i> (1871), the name was given as a man seeking rock salt found pot-clay.	2. <i>Korungoro</i> (1871).
2. <i>Sowee</i> (1877) ...	5. <i>Kiptarmesendet</i> (1876), a youth refusing to be circumcised, cut a basket (<i>mesendet</i>) in anger.	3. <i>Kiptil-mesendet</i> (1876), from <i>til</i> to cut, <i>mesendet</i> basket.
	6. <i>Koboloia</i> (1881), from <i>pol</i> or <i>bol</i> to dig; a novice commenced cultivating his fields when he should have been preparing for his initiation.	4. <i>Kim-ororik</i> (1881), the hair of the body, not head, possibly a reference to the pubes.
3. <i>Kipkoimet</i> (1885) ...	7. <i>Kimasiba</i> (1886), the name of a district in Sotik where perhaps the ceremonies were notable.	5. <i>Kimut-Aiguet</i> (1886), the breakers of axes; most probably <i>Kimasiba</i> opposite is another correct name as the ceremonies always begin in Sotik and work northwards.
4. <i>Kaplelach</i> (1892) ...	8. <i>Kubabocha</i> (1891), from the fact that the novices had not reached puberty.	6. <i>Ka-papucha</i> (1891), the unshaven, this contains the meaning opposite.
	9. <i>Kipsiljoget</i> (1896), from <i>joget</i> a sword sheath and <i>sil</i> or <i>sin</i> , the root of the verb to rub, the hair off the skin sheath.	7. <i>Kipsin-joget</i> (1896), the makers of sheaths; or <i>Tulugon</i> , the eclipsee.
5. <i>Kimnyike</i> (1900) ...	10. <i>Tabaret</i> (1901), the name was given as the wife of the <i>pamungo</i> of the novices did not have her ears bored.	8. <i>Kapar-it</i> (1901), the unpierced ears, an extraordinary omission with the tribe.
6. <i>Nyonge</i> (1907) ...	11. <i>Kosigo</i> (1906), from a district in Sotik as <i>Kimasiba</i> above.	9. <i>Kosigo</i> (1906), as opposite.
	12. <i>Kipsirgot</i> (1911), so called because huts were counted for tax for the first time.	10. <i>Kipsin-lat</i> (1911), from <i>sin</i> to mark, and <i>lat</i> hut; huts were counted by the counter marking the door as he counted.
7. <i>Maina</i> (1915) ...	13. <i>Buloo</i> (1916), so called because the tribe entered the labour field this year in some numbers, and made their thumb marks in purple (<i>buloo</i>) ink.	11. <i>Buloo</i> (1916), as opposite.
		12. <i>Mesiana</i> (1921), thought to be a reference to the recent Spanish influenza epidemic.

¹ Hollis, *The Nandi*, p. 12; Dobbs' Art.: "Lumbwa Circumcision Ages," *East Africa and Uganda Nat. Hist. Soc. Journ.*, vol. xvi p. 55.

The Nandi age names do not agree with the second and third columns of the table, which are in nearly complete accord; this may be accounted for by the fact of different tribes, but the Nandi and the Kipsikis are practically the same tribe. The difference in nomenclature is more apparent than real, as the Kipsikis recognize all the Nandi age grade names as their own, and the fact is that the Kipsikis age grade names given in the table are, as is obvious, nicknames. This is further borne out by the similarity¹ between the Nandi and Suk age grade names, and for that matter the similarity with the rest of the cognate Niloto-Hamites, save the Masai who are more Nilotic than anything else, and with whom the Dorobo or Ogiek are outcasts, and it is with the last-mentioned that there is reason to believe the system, as well as the rite which it follows, originated.

It is stated² that the Nandi age grades occur approximately every $7\frac{1}{2}$ years; from the tables it appears among the Kipsikis every 5 years, but with the Kipsikis this is not literally true; circumcision occurs every year, there are quite definite traces of regular lustrums in the past, and the old names are forgotten.

The age grade is known as *ipinda*. The Kipsikis does not surrender his wife to a visitor of his *ipinda*,³ as with the Masai and some other tribes, nor for that matter to a member of his clan. There is no trace of anything approaching "totemism" with the age grade. Possibly in the past the various *ipinda* formed companies of the *puriet* or warrior band;⁴ this is probable, as members of the same *ipinda* to-day treat their fellows as do Europeans of the same University year. There is little of any note in the age grade customs, save that, provided he has undergone the *Kuriet ap Kirokwek*,⁵ breaking of the staff, rite, a man visiting a member of his *ipinda* has his hands washed by his friend's wife on entering the hut.

There is no trace amongst the Kipsikis of the ceremonial handing over of the country from one age to another, as with the Nandi at the *Saket-ap-Eito*, and the Nandi probably borrowed this from the Masai, most probably through the Masai *Orkoivot* strain, which established itself as suzerain in Nandi long before the cadet branch migrated to the Kipsikis. (Cf. Hollis, *The Nandi*, p. 12.)

XIV.—MEN'S CEREMONIES.

Some time after circumcision, generally before marriage, young men undergo a further ceremony, *Koriet ap Kirokwek*, the breaking of the staff, the reason for this

¹ e.g. the Sak *Kimnyarikil*, the newly born; *Maina*; *Juma*, the renowned; *Sombai*, the lucky ones; *Soire*; *Korongoro*, the ants; *Kablelach* or *Kipkoimet*; *Mergatwa*, the pot lickers; *Nyonge*; *Siroi*, the dik-diks. These closely follow the Nandi, Kamasia, Elgeyu, etc., names.

² Hollis, *The Nandi*, p. 12.

³ *Jus prima noctis*?

⁴ Another explanation might be that the *ipinda* was an organization intended to regulate marriage to members of the same generation; to-day a man may not marry a woman whose years would place her, if a man, in an age grade senior to his.

⁵ Cf. *infra*.

name is obscure, no stick appears to be broken; possibly the name refers to the *kosisitiet* stick, which the father of a neophyte obtains from his son by a present at the end of the circumcision ceremonies.

The candidate for the *Koriet-ap-Kirokwek* waits outside the hut with a *moteriot*; inside the elders strangle¹ a ram provided by the candidate and eat its meat, examine its entrails for an omen, singing "*Ha-o-i*." A wisp of *sinendet* grass is tied over the door, the candidate and his *moteriot* enter and are greeted with, "*Ngi-kuirchi kongbo njolian kule ne, chorullialull*," "If the water in the hole is stirred what says it, *chorullialull*" (onomatopoeic).²

The *moteriot* leading, they both pass round the fire on all fours, then round the ridge pole of the goats pen in the hut, then to the door, here they sit down. Near the door is a stool, *ngecheret*, covered with a monkey-skin robe; under this and on the stool is a bunch of the *siek* nettle. The candidate is told to feel the robe and say what is underneath, he replies "a stool." He is then asked what is on the stool. The *moteriot* in a stage aside prompts him to say, "*mwait ap totwa ignoet*," "butter from a cow with its first calf." The elders ask the initiate if he will sit upon it, he assents, is he told to sit upon it, as he does so, the fur robe is slipped aside, he sits on the stinging nettles, and remains there until told to get up. He may not cry out, if he does so more nettles are put on the stool.

The nettles are taken away, and the junior man present takes a piece of *chesolait* grass which is wetted with salt from the lick, it has a cutting edge, this is drawn down the cheeks and breast and causes a scar. The elders tell the operator to stop, as the candidate is not so bad a fellow after all.

The entrails of the ram after haruspication have been covered, they are now uncovered, and have been arranged so as to resemble a female child. The candidate is told not to tease children, not to touch a child unless it is lying helpless in the rain or near an ant's nest, or in other dangerous circumstances, and then never to tell the mother he has touched the child; that now his hands may be washed by the wife of a man of his age grade, *ipinda*, when he visits him, that he may not accept such attention if he has recently touched a child; that he should not be a glutton when a guest. Next the stomach of the ram is broken with the *loynet*, cupping arrow, which is bound with *kirundusiek*, *sigecheonik*, *sinendet* grasses,³ the wind escapes from the stomach. All present imitate the sound. The ceremony ends with a "*Ha-o-i*" in unison.

Possibly the meaning is that now the youth is fit to take his place at the constant feasts of men, having provided his first animal for such. The latter stages of the marriage ceremonies cannot be undergone by a man until he has completed this ceremony.

¹ Animals are always strangled.

² A reference to the hole with water in it at circumcision.

³ Recognized as good grazing grasses.

Later, after marriage, comes the *Kulet Eit ap Muket*, the slaughtering of the *muket* ox.

An ox, or queen cow, and with some clans a ram, is brought by the neophyte near his *malwaita* shrine. His immediate relations sprinkle it with milk from gourds which are partly stoppered with *siretiot* grass. A fire is kindled of *lobatonik*, *senetonik*, *segechonek* grasses with the addition of a little fat from the stomach of a beast, the smoke ascends to the ox to be slaughtered, the ox is thrown with its head towards the sun, it is tapped on the right side with the *loynet*, cupping arrow, and with the *kuriot* club, the nostrils are covered with a skin bag, a stick is pressed into the gullet until it dies, the animal is then skinned and the entrails examined for omens; if auspicious, those assembled chant "*Ha-o-i*" several times.

All who have not been initiated are sent away; two legs of the ox are tied with bamboo slivers and with the grass cover, *kap-loynet*, of the *loynet* arrow, the candidate and his *moteriot* take the tied legs and with the hooves split the stomach; all present copy the belching sound which follows, the fat is taken out and divided into two pieces, the *moteriot* places his piece four times to his lips, the candidate likewise.

Those who have been sent away, *kimungeninik* or juniors, are recalled; everyone is given rings of the ox-hide for the big finger of the right hand, and an armlet for the left arm, a fire is made under a *tebeswet* tree and the meat is cooked on skewers of wood, it may only be cooked in this fashion. The greater part of the meat is consumed by the neophyte's *puriot*, or warrior band. The wife of the candidate is not allowed to be in the vicinity. The place of slaughter is cleansed lest she tread upon it; the father and mother of the initiate eat the heart and head of the beast. Neither the candidate or his wife may eat any of the meat. The *moteriot*, as the novice, wears a monkey-fur or hyrax robe, *sambut*. Finally the skull and horns are placed over the door of the hut.

This ceremony would appear to be a continuation of the *Koriet ap Kirokwek* initiation feast, and to mark an entrance to elderhood as distinguished from manhood.

There is yet a further ceremony, not, it is believed, confined solely to men. It is performed when a man's procreative powers have ceased, and is known as *Sondoiyot*. No details are forthcoming, and it is doubtful if they can ever be obtained, as those undergoing the rites are all old and conservative men. It is thought that certain large blue beads are worn by initiates.

XV.—CIRCUMCISION OF GIRLS.¹

Clitoridectomy is practised upon girls when they reach a marriageable age, some 15 or 16 years.

¹ No man may ever speak of his circumcision ceremonies to a woman, or woman to a man. The details given are those noted by men out of curiosity, and have been collected in the main by a mission convert from his wife, also a convert; it is, however, certain that this woman would not give all the details. Circumcision is the greatest secret in the life of a man or woman of this tribe. Marriage ceremonies are also closely guarded.

At about 4 p.m. on the previous day the assembled initiates dance the *Kipsegoit* dance, singing, "I shall be circumcised to-morrow," the *murenik* or warriors dance the *Tiendo* dance. The girls carry wands known as *korosek*, of the *sinendet* and *kurundusiet* trees, and wear *mungenik*, warriors' anklets of monkey fur, carry a warrior's club, *rungut*, don warriors' bells, *kipkurunguraik*,¹ and a warrior's back cape, *sigoisit*. Their fathers wear the *nariet* headdress,² a circlet of cowrie shells, and their mothers bands of *sinendet* around the forehead and sashes of the same across the breasts.

Stools are placed near the *mabweita* shrine, and on them are placed a piece of brass wire used for women's earrings, milk, and the salt used by goats; only girls who are virgins may sit on these stools.

The dance breaks up at 9 p.m., and all males leave. The girls are taken into the *Kaptiriot*, or circumcision hut. This is an ordinary living hut which has been vacated, all their ornaments are taken off, and they enter the hut naked,³ a belt of *kimelaik* grass is tied round the waist and *siek*⁴ nettles are inserted into the vagina by the operatrix, *kork'ap tum(da)* or *mwatendet*, who is paid half a rupee or some brass wire for her services; a circle of brass as used for women's earrings, *tayet*, suspended from a chain is placed four times on the lips of the girls; the neophytes hold a piece of skin, *kweyet*, used to sweep the huts, and wear a food bag, *kesiet*, on their heads.

Previous to the ceremonies a large disused cooking pot, *tama-terit*, has been prepared by the women; in this is placed a salt pick, *majaita*, a cowrie shell belt, *legetiet ap segerok*, a stole-like necklace, *semonok*, of cowries and beads, a cupping arrow, *loynet*, a needle used by women to sew string bags, *katet*, and a number of solanum berries, the whole is covered with a red duiker (*U. igna isaaci*) skin known as *kesenda*.⁵ This is hidden in the hut, and is played upon by the old women, to the mystification of the girls, by moistening the skin cover and rubbing with fire sticks, *piyonet*, as a friction drum.⁶ The contents of this pot-drum are not shown to the girls until they end their seclusion.

The girls wearing the food bag, *kesiet*, on their heads take the dust sweeper, *kweyet*, upon which has been placed a number of solanum berries, in their left hands, in their right hands they carry a mud imitation of a child's gourd, *setet ap lakwa*,

¹ Originally only worn by a virgin.

² Originally only worn when daughter is a virgin. cf. that worn by a virgin's mother with the Suk, and the *umncwasi* of the Zulu mother, *Man*, vol. xxi, p. 149.

³ Girls wear only a skin cape over the shoulders at ordinary times, nowadays a cotton cloth, *amerikani*, is used; an ornamental apron, *oriet* in occasionally worn, it is made of beads threaded on wire.

⁴ In order to anaesthetise the parts and to facilitate manipulation.

⁵ Used by some clans for making the bag in which a child is carried on its mother's back.

⁶ The name of the pot-drum is *tama-terit*, *terit* is thunder.

on their backs is placed a mud figure of a child borne in its leather sash¹; they proceed on their knees around the hut carrying these articles, after this they sleep in the hut for the night.

On the second day at about 5 a.m. the girls leave the hut, and stand some 200 yards away facing the rising sun, a slight cut is made by the operatrix upon the clitoris, they then sit down upon a piece of skin and the whole of the clitoris is excised; behind each novice stands a woman to support her, known as *tiendet*.

Girls are circumcised according to the seniority of their father's age grade, *ipinda*; the first girl to be operated upon is called *kiboretiet*, the last *koumko*, a coward is known as *chebite* henceforward.

The knife used is curved, and is called by women *rokiet*, a broken potsherd; the first cut is known as *mwatet*, the second *yatitiet*. A childless man may be present.

After the operation, porridge and milk is given on a piece of broken gourd. The hands may not be used in eating for two months. The night of the operation the initiates rest in a crouching fashion with pads of grass on knees and elbows to aid them, in order to prevent blood entering the vagina. During the time they are immured they must sleep on the right side.

The girls remain in seclusion in the *kapteriot* hut for the next two to two and a-half months. They make small cattle bomas, *kaptich*, build small imitation huts near them for their prospective husbands, placing solanum berries in the kraals for cattle, in fact playing dolls' houses.

About three months after comes the *Lapat ap Eun*, washing of hands, ceremony; women bring a beer bowl which is plastered with goats' dung and studded with solanum berries, the beer made of eleusine grain, *maiseek*, is drunk by the women in man's fashion through *rogorosiek* tubes even to drunkenness. The girls, as the boys, are attended by *moterenik* of their own sex (though they do not seem to play the important and constant part as in the male ceremonies, probably because of their household work), these wear *kimolwet* sticks on their heads, fashioned like horns, and also an arrangement of solanum berries.

Early the next morning the women make an arch, *oret maricha*, of *kosositiet* sticks, and when possible of bamboo, *tegat*, and *tebeswet*, these are somewhat common sights; on the crown of the arch is placed a nest of tree ants, *gahet*, the girls pass through four times, the nest is beaten as they pass, and they are stung by the falling ants. A small hut has been built near the *mabwaita* shrine, which is covered by the girls' skin garments; in this hut is placed a small goat's trough, *moinget*, in this salt, a salt pick, *majaita*, a cupping arrow, *loynet*, solanum berries, milk, a mud image streaked with moss supposed to represent the lightning, *ilet*, while a woman secretes herself with these things within the booth. The girls preceded

¹ Perhaps a primitive trace of the doll.

and followed by their *moterenik*, pass round the hut four times, singing, the women beating their leathern skirts and their wire armlets to the tune, the girls are naked. The hidden woman shakes the erection, and the girls are told this is the lightning, she leaves silently while the girls are taken apart, they return, and are told to take their garments, they do so trembling. The hut is broken down, and then the girls' hands and arms are washed in water mixed with salt. The girls raise their arms, they may not lay them to their bodies for this day, and hands may not be used in eating. From now onwards they have a little more freedom, play at making the dolls' houses noted above, and early each morning assemble to sing the *Kipkorer*, or early-morning song, which begins, "Now the elephants are drinking, take the cattle out."

About two months afterwards takes place the *kaiyaiet*, or encircling; the pot-drum, *tama-terit*, is brought and beaten, on the ground a little beer, *maiwek*, is mixed with mud, a mud imitation of a plate-skin, *kirabaita*, is made, also similar imitations of a shield, a spear, a child's gourd, a *bwaswetet* snake, and a buffalo, apparently for no other than a pictographic purpose. The stream has been dammed, and an arch, *oret maricha*, the narrow way, built on each bank. On the top of the arch cowrie-shell belts are tied, as well as bunches of *sinendet* grass; the girls and their *moterenik* pass through each arch and the pond four times, the water must not enter their mouths, if it does, they are *ngween*, unlucky, and have considerable difficulty in getting a husband. After this, a species of lizard, *ngiritiet*, is placed on each girl's right foot; fenced by the hands of the *moterenik*, it crawls up the flanks, along the right arm, over the head, and down the left arm to the left foot. A girl over whose body the lizard refuses to crawl is *ngween*, unlucky; should the lizard defæcate, the girl is very lucky and her fertility is assured.

This concludes this ceremony. From now the girls wear a peculiar inquisitor-like garb,¹ consisting of a conical leather head-cape, with slits for eyeholes known as *ngoriet ap mit*, which is sewn by the neophytes, and a leathern "coat-frock," they carry *motolik*, a bundle of wands made of *labotonik* sticks, which are prepared by the *moterenik*. In order to thrust away her uncleanness she touches a boy or a "foolish" warrior, as do the boys a girl or woman; the *motolik* are carried in the left hand, the touching stick in the right, the latter is thrown away, its office completed.

Some time after this comes the *Nget'unatet*, the day of departure. The girls go to the stream and bathe, discard their ceremonial clothing, and don new garments. If their elder brother or sister has died they wear a monkey-skin robe, *sambut*. A lump of butter, in which grass is laid, is placed on the head, and as it trickles oils the body. The *moterenik* preceding, and following they come in halting fashion to a gate-fence made of sticks, on the other side of which their relatives and friends are

¹ For photograph see Hollis, *The Nandi*, p. 59.

assembled, a quantity of solanum berries is strewn near this gate. The brothers of the girls and the girls themselves take hold of the fence, raise it, the girls saying "*Oyotwan oret*," "Open the way," they pass through and are anointed with fat by their female relatives.

The girls' seclusion is now completed, and they are ready for marriage. Their mothers shave their heads and place the hair in the *mabwita* shrine of sticks outside their huts; when the hair has grown again, it is trimmed by the mother, and now their prospective husbands may take them, but not before the second hair growth has been trimmed, and not before they have enticed a youth to lie with them. This does not actually take place, as the invariable custom is for the girl to repulse him and run away to her prospective husband, having again rid herself of an uncleanness. The custom is known as *buriet*.

These ceremonies are remarkably like those practised at the circumcision of boys, and, if anything, this fact testifies to the truth of their detail. There is no doubt, unless there be any other reason for clitoridectomy, that the rites are imitative of those of males, possibly the details were in the past arranged by the barren women, who are allowed to witness the circumcision of boys.

The answer of a man as to the reason for the operation performed upon the girl is always, "Why should not they be circumcised if we are."

It is not possible to guarantee that the details given above are complete. As regards visual details they probably are correct; but an amount remains to be recorded of the teaching of the old women as to the duties of a wife, which it will probably be very difficult if not impossible to obtain; for instance, men say the girls are taught not to bear all their children to one man, and are advised to have some children by a "fierce" man, and others by a man of milder nature.

Girls are threatened by the old women with dire penalties if they betray the secrets; the stink ant, *samonyet*, and the meat fly, *kaliangot*, both carrion insects, will be their children, a piece of stick their *loynet* or blood-letting arrow, and a log of rotten wood their platter should they divulge the rites, and the native women of the tribe are conservative to a degree. (Cf. Hollis, *The Nandi*, pp. 57-59.)

XVI.—CIRCUMCISION AGE GRADES, WOMEN.

These are curious and a further indication that the ceremonies which have been detailed are merely imitative. Strictly speaking age grades with the women of this tribe and its cognates are an absurdity; they are of quite recent origin and are more a joke than anything else. They are:—

- (1) *Chemachul* (1909). So called as no porridge was made for the neophytes after the operation.
- (2) *Chepandek* (1913). Eleusine grain, *pek*, is the staple grain crop; in this year maize, *pandek*, was introduced for the first time.

- (3) *Chepperesi* (1917). This year roads, involving an amount of drainage, were made; *feraji* (Ki Swahili) = a drain, *peresi* in the Kipsikis pronunciation.
- (4) *Chepkokoiek* (1918). *Kokiek* is the name for the Akikuyu tribe, some members of which were present at the dance preparatory to the ceremonies.
- (5) *Chepkiskawa* (1919). *Kawa* is a loan-word from the Ki Swahili, *kahawa*, meaning coffee. This year the women and girls took to coffee picking on farms.
- (6) *Cheptilangit* (1921). *Langit* is Amerikani, a cotton cloth. A girl after being operated upon, ran to her home, threw away her ceremonial garments, and donned a piece of trade cloth, refusing to return for the rest of the ceremonies.

From the dates above there is no trace of regular lustrums. The age grades are not properly age grades at all, but nicknames. They perhaps show the manner in which the age grade arose in the case of men, playful designations for a set of youths of about the same years of age at the time of circumcision.

XVII.—SEXUAL RELATIONS.

In European morals the tribe would be deemed flagrantly immoral, in fact, they are non-moral. The incest prohibition is never broken, and the prohibited degrees of affinity are wider than those of the Prayer Book. There is, moreover, more than a mere regard for chastity and virginity, despite the fact that the youths and girls are prone to free-love.

Free-love between the unmarried is usual, but it does not reach the stage of large warrior-girl barracks, as with the Masai; were the Kipsikis to attain their ideal and become a purely pastoral tribe they would no doubt follow the Masai custom. The old people prefer a settled home, the warriors must go far afield to good grazing areas, they set up men's club-houses, and girls visit them to take back the milk to the parents, and are necessary for their dances; the rest naturally follows. Where there are unmarried sons who have attained puberty they sleep, if their father is alive, in the *sigoroinet*, a small hut near their parents, used by them alone; from something similar to this the Masai warrior *manyatta* probably developed.

Each youth has a sweetheart in particular, with whom he sleeps from time to time away from her mother's hut; if she is a virgin, he respects her virginity for years while sleeping with her. Like himself, she may have other inclinations, and should she be deflowered he would respect her chastity no longer; there would be no quarrel with her other lover unless this man endeavoured to supplant him permanently in her affections. A number of youths and girls may sleep in one hut. There are no indecencies, indecency in the European sense is as yet unknown when living in the tribal state.

Youths and nubile girls go almost unclad, and are unashamed. Their conversation is often frank and coarse, but never before an older man or woman. There is a natural avoidance between the lover and his sweetheart's mother, as in the mother-in-law prohibition. A father never questions his daughter as to her lovers, or a mother her son. The circumcised youths, *murenik*, resent the interference of the uncircumcised in their affairs most strongly. If an unmarried girl becomes pregnant, a rare occurrence, the child is smothered by her mother, no stigma attaching to her lover. It is stated that of recent years the number of declared virgins at the circumcision ceremonies is small, and decreases each year, despite the approach of civilization and missionary teaching. The striking thing about these youth-and-girl friendships is the real affection shown, most noticeably absent in married couples until they reach old age; unfortunately, the lover rarely marries his sweetheart, she is married to an older and richer man.

A man may not have relations with his wife if she is a virgin; she is deflowered by her former lover with his tacit and uninquiring consent. Marriage with the tribe is an avowed economic partnership, and were it not for the ceremonies which the parties undergo might well be said not to exist. Polygyny is customary, the number of wives rarely exceeds six, and is usually one or two. Every woman has a lover and every man a number; it is literally true that the common practice is for a wife to bring girls to her hut for her husband's gratification, and the more lovers he has amongst the unmarried girls the prouder woman she is; he lies with the girls while she is present, it is otherwise when his lovers are married women. A man does not recognize his wife's lovers.

Other than economic and ceremonial bonds of marriage there are no marriage bonds. Wives constantly run away from their husbands to the townships and settlements, where they, together with the Nandi, form by far the largest proportion of the common prostitutes for gain. The tribe do not consider their tribal women as prostitutes; a woman becomes a prostitute when she cohabits with other tribes for mercenary purposes, and when she is a common prostitute there is no question of payment by men of her own tribe also living out of the tribal area; her gains she ultimately brings or sends back to her male relatives.

The causes of the increasing prostitution of women for gain are first that a man, generally much older than herself, obtains a lien on her when a child as his future wife by a payment of a goat or two, to be followed on marriage by a full payment, by the time of marriage she generally has other affections; second, that a widow cannot re-marry; third, that the woman, who has had an amount of attention in her girlhood, becomes more of a beast of burden on marriage with this tribe than is usual in East Africa, and the men of the tribe are extremely bad husbands.

Children born to prostitutes and to women who have become nominal Mohammedans invariably seem to be absorbed in the tribe; the mother's tribal instinct in this matter is very strong.

Rape in the legal sense is not uncommon, it is not regarded as a crime by the tribe; formerly were a woman found out of her *koret*, or parish, she was the lawful prey of the warrior youths, but not of those of her *koret*. Instances have occurred of recent years of a runaway wife being raped by a number of men with her husband's and father's consent, in order to punish her.

Men do not leave their wives to guests of their own clan, as is stated do the Nandi.

Unnatural vice is rare, and when it occurs is traceable to alien influences.

XVIII.—MARRIAGE.

It is not too much to say that in Sotik the first earnest of the bride-price is paid while the girl-child is as yet unweaned; in Buret and Belkut the first payments are made when the girl is nubile. The former custom is the most sensible to the tribe, they state that the girl will appreciate her future from an early age and avoid the "fast" life of her sisters in the rest of the tribal area; the presumption is not proved in practice and is mainly responsible for the constant matrimonial discords. When once this first payment of a goat or so is made the payer has a lien on the girl for the rest of her life; instances are quite common of first payment being made, and the father later marrying his daughter to a richer man to whom she bears children, who may reach twenty years of age; if the first payer delays over his rights, and it is proved that he did make the first payment to the satisfaction of the elders, the woman, with all her children, goes without demur to him on his paying a full-bride price equal to that paid by the usurper, no objection being raised by the children. A man will never forgo a lien of this nature, whether he has a number of wives, much property, or is impoverished.

When the girl has emerged from the *kapteriot*, after the circumcision ceremonies, and is still in semi-seclusion in the hut of her mother, the father of the groom-to-be, dressed in a "blue" monkey-fur robe, *sambut*, or else in a hairless goatskin garment, ornamented with spots of bead work, *sumet*, and taking in his hand an unbarked and oiled *norgirwet* stick, or if this is not obtainable a stick of *koriot* wood, goes to the hut of the girl's father; the journey is known as *koita*.

On arrival, he remains at the *mabucita* shrine, sends in a message that he has "come *koita*," the girl's father comes out and asks him what he wants, he again replies "I have come *koita*"; he is asked what he has brought, he replies "an *iwoget*," a fertile cow.¹ He then returns home after a little general conversation, and a date is appointed for a future meeting, which is generally the next day. In the meanwhile the father of the girl satisfies himself as to the status of the groom.

The father of the groom returns dressed as before; is again asked what he has brought, and replies "a *moita nyoo*," a large calf¹; he again returns after some

¹ The animal is not taken, and is symbolic only.

polite conversation, a third meeting having been arranged, generally the next day.

Dressed as before, he comes again; is asked what he has brought this time, "a *moita mining*," a small calf¹; again he goes home having made a further appointment.

He comes for the fourth time of asking, and says he has brought "an *aita*," bull, and this time he returns with the father and brothers of the girl to see the actual cattle he proposes as bride-price, the visitors remain with him, and there is much haggling over the payment to be made.

If they agree, the following day the groom and a friend of his *ipinda*, age grade, go alone to the hut of the girl's father, both clad in a *sumet* robe, which is often borrowed for the occasion; and, the groom preceding, they are both anointed with butter by the father, mother and brothers of the girl, the girl herself is not seen. This completed they return home.

On the sixth day the groom and his friend return to the girl's father and enter his hut by the back door,² *kurk-ap-sang*, having first agreed to pay a sheep or a goat before entering by this door. Skins are laid in the goat's compartment of the hut, food is prepared and is presented to them by a sister or friend of the bride to be, their hands are washed by sprinkling water from a gourd; after this, they are both anointed with butter by the father of the girl, who places a little on the forehead and draws it down from the sides of the body and the legs. They make their exit by the same door and return home where they wait a day.

On the eighth day the groom, accompanied by a *mistoat*, i.e. a herdsman, a boy page, and a *cheplakwet*, i.e. a girl nurse, sets forth early in the morning, they may not eat before starting; if the *kiptildiliet* bird calls a little in front on their right hand bad luck will follow, if on the left, good, if the bird calls from a position directly opposite their right thigh this is a very evil omen and they will return; if one stumbles³ on the path they may return; they may not greet passers-by.

On reaching the hut of the father-in-law to be, all three stand near the *mabwaita* shrine, the girl is called and told that *sandana*⁴ son-in-law, has come, she refuses to come out of the hut until her father promises her a sheep or a goat, she then comes out and goes to the *mabwaita* shrine and stands with her future husband. Her father and brother bring horns filled with butter, which her mother holds while the butter is taken out with a *sosiot* spoon, an amount is first placed on the frontal bone of the groom's head and in this are laid four pieces of *seretiot* grass with the blades running backwards, then upon the *mistoat*, the girl is similarly anointed, followed by the

¹ The animal is not taken, and is symbolic only.

² The huts do not appear to have a back door; in fact each hut has, but it is generally blocked up and is only used on this occasion.

³ Each person has "lucky" and "unlucky" toes peculiar to himself.

⁴ *Sandana* is the direct address for son-in-law, sister's husband, father's sister's husband.

cheplakwet, the butter from the forehead is then smeared down both sides and legs of the pair, next the father anoints his wife, his eldest son and his children.

After this, the girl returns with the groom's party to his mother's hut, where she sleeps, whilst he sleeps elsewhere. A day or two passes before the marriage.

A *moteriot*, sponsor, who must be a married man, is chosen and an amount of *maintek*, beer, is made, and together with a number of elders the pair proceed to a living hut set apart for the ceremony. The bride wears a *kiskisto* dress and a *narjet* headdress, the former an oiled dressed skin ornamented with beads, the latter a circlet of leather ornamented with beads, chainwork, and cowrie shells; she wears the large circular brass *taiyek*, or married woman's earrings, tied on her back she carries a child's gourd, a *sosiot* spoon, a *loynet* cupping arrow, and a cow's bell. The groom wears a long robe of dressed goatskin, *sumet*, or, if his elder brother or sister have died, a monkey-fur robe, *sambut*. The bride refuses to enter the marriage hut until she has been promised a sheep or a goat. The groom and bride sit on the floor with legs outstretched, the *moteriot* plaits two cords of *segutiet* grass, he works these smooth with saliva, places them on the outstretched hands of the pair, who also spit upon them and work them smooth and hand them back and receive them four times, then the groom ties one string on the bride's right wrist and she the other on his, all present say "Soi." The elders continue drinking, all sleep in the hut, the bride and groom apart. This day is known as *Katet ap Murenat*.

The next morning the *moteriot* takes the *segutiet* grass twine to the *mabwaita* shrine of the marriage hut, and there burns them on a fire of *labotonik* and *senetwet* wood to which is added *kirundusiek* grass; after this food is eaten by the party.

The pair now live together as man and wife, provided the bride has shaved her head twice since circumcision and has lain with another man, *ichuret ap nisik*.

Sometime after, generally after the birth of the first child, the *Tiegit ap Sigut*, treading on grass, ceremony is undergone. The elders of both the husband's and wife's clans meet; beer is made and placed in a pot in the middle of the hut, *sinendet* grass is tied around the neck of the bowl, four drinking tubes, *rogorosiek*, are placed in the bowl each tied with a wisp of *sinendet* grass and a quantity of milk is put in readiness. The *moteriot*, followed by the husband and wife, with his wife following, pass around the pot four times, they then sit in a row, an elder places a *rogoret* tube four times on the right side of each of the four and all say "Soi"; the elders then chant "*Ha-o-i*" several times, and all fall to drinking, the husband and wife sparingly. A small hole is made on the floor, in this is placed a *noyirwet* stick, tied to this by a cord of *inyetwet* grass is a *loynet* cupping arrow, and a *sosiot* spoon, in another small hole some *segutiet* grass is placed as if it were growing.

The next morning the same four pass around these things four times and tread upon the *segutiet* grass while all chant "*Ha-o-i*" several times; the trampled grass is covered with mud and goat's dung. The day after there is a dance of men and women. The marriage is now completed.

A strange custom obtains, more particularly in Sotik, whereby a childless woman, perhaps one of several wives, "marries" a girl, and performs all the male parts of the foregoing ceremonies; the girl lives with her, and if one of the co-wives of the "husband" has a grown son he cohabits with the "wife," if there is no such son another man is chosen, and any children he has by her are the childless woman's not the mother's; bride-price is paid by the woman for this girl, it is small, and generally consists of the stock she received as presents when she was a bride herself. In one instance, a woman had as many as three "wives," there is no admitted trace of a servile status in the "wife," and no coherent answer is given to the question why, if a woman is childless, should not her husband marry another woman himself.

Apart from the ceremonies, and it is suggested that they imply fertility only, marriage with the tribe seems to be a commercial transaction and an economic partnership. (Cf. Hollis, *The Nandi*, pp. 60-64.)

XIX.—DIVORCE.

Divorce is extremely rare, and a woman who has borne children cannot be divorced, whether her children are by her husband or by a man with whom she has lived for years; harlotry is no ground for divorce. Conjugal disputes are incessant, and though on European suggestion a man and wife may part, there is no idea of a divorce, in the husband's mind at any rate, and the parties come together again; occasionally a man drives his wife away but he does not relinquish his rights.

There are some grounds for the statement that divorce only occurs where one of the parties has offended grievously against the family group of the other, as in the case of man killing his mother-in-law, or where a man has incestuous relations with his wife's sister; in cases like these there is some argument before the elders, the husband and wife agree to divorce, each anoints the other with butter, each says the other's first name, which is never used by married couples, the man says "*Takwenya*," the woman answers "*Sobai*."¹ (Cf. Hollis, *The Nandi*, p. 69.)

XX.—ILLNESS AND DEATH.

Illness is generally attributed to the shade or spirit, *oiindet*, of a deceased ancestor or relative, and the advice of a "wise woman" is generally sought. If a man or woman is seriously ill of an unknown disease four pieces of the *tebesuet* tree from which the bark has been stripped are taken, a potsherd of the *tabet* bowl is turned upside down and mud is smeared on the bottom, it is then turned upright, the *tebesuet* sticks are placed upright in holes in the earth and an attempt is made to balance

¹ "*Takwenya*," answer "*Iko*," is the man's salutation to a woman, but "*Sobai*," answer "*Ebo*," is the salutation to a small boy; with other cognate tribes it is the salutation to a *muren* or warrior.

the *tabet* potsherd on these sticks; while this is being done those present repeat "*Inyi oindet anum ingo-ngo kokiparin korut kokima parin*," "O shade of so-and-so if you were killed by an illness we did not kill you"; when the potsherd balances on the sticks, the shade of the ancestor whose name was mentioned when this occurred, is deemed to be the shade responsible, the sick man kicks the *tabet* sherd over with his right foot, the *tebeswet* sticks are taken out of the ground, a relative takes two in each hand, rubs them with the mud smeared on the *tabet* sherd, and traces them over the forehead and whole length of the sick man, the two sticks held in the right hand are thrown outside the house, eleusine grain is taken and thrown on the fire with "*Iste njom pak¹ onyi orten. Pwa!*" "Take away and eat this grain on your way. Go!" The ceremony is known as *Oterek up Pak*, the throwing down of grain, and it is only followed when the disease is unknown or sudden.

The patient should sneeze the following morning, and relatives and friends visit him to enquire whether he has sneezed, if he has, then his illness was a sickness, and not due to ancestral spirits.

For ordinary diseases, decoctions of bark, roots, and leaves are used, cupping and canterizing are followed, likewise superficial surgery and bone-setting; where there are injuries due to mauling by lions or leopards, tobacco and water are given as an emetic.

When a man or woman is nigh unto death, milk is poured on the mouth and water on face and breast, visitors are told "*kakon-nguratit kabwet*," "the spirit² is becoming less" or "*kiripa*," "watch is being kept."

After death the corpse is placed near the fire in the hut and is covered with the deceased's clothing, women and children wail the *Katet* cry³ "*Woi-woi-woi*."

A goat or sheep is killed outside the hut, the entrails are examined for omens; if auspicious, the undigested food of the stomach is thrown into the doorway of the hut and on the corpse. Next the body is denuded of all ornaments by the eldest grown son, otherwise by the deceased's own brother; when the body is ready to be taken to the grave those present say, "*Iiyaten komuye, itun kekur keny nya komuye*," "Lay (him) honourably (in the grave), presently he will be called to come again with honour."⁴

The eldest son carries the body in his arms to the grave, in which are laid the clothes of the deceased; if the deceased is an old man who has grandchildren, the body is buried on the right of the doorway, if the deceased has children the body is buried some distance from the hut, if childless the body is placed in the bush for

¹ *Pak*, eleusine grain.

² The word for soul seems to be *mukulet*; for ancestral shade, *oindet*, pl. *oik*; *kabwet* is translated "spirit," it contains an idea of a something intangible.

³ The same cry is used on all calamities.

⁴ The meaning is a re-birth in one of the descendants.

the hyænas¹ and jackals, but a child which has not teethed or is less than about three years of age is buried "as it is feeding upon its mother's milk which the hyæna may not use as food."

The burial position is on the right side, both hands are placed under the cheek with the legs slightly drawn up,² women are buried in similar fashion but on the left side. A grandmother is always buried by her last born son, a mother of young children by her husband. When the body is placed in the bush the posture is the same.

The grave is about four feet deep, the body is placed on the earth at the bottom, *kipkandilit* grass is placed over the corpse, no earth is put in the grave, at the top the grave is covered over with a network of sticks, on this are placed sods, then earth, then thorns. There is no trace of recessionary burial.

After burial the person burying goes to the stream and washes the whole of his body, he returns naked with two sticks in his hand, when near the hut he beats them together, at which the mourners come out and place grass in his mouth, retaining this he takes a mouthful of water and then spits out both, he now puts on his clothes and some of his ornaments and anoints his body with sheep's fat.

After this an exudation from the roots of the *sagowaita* tree known as *kigomnyet*, *korosok* grass, and a small piece of hippopotamus hide known as *magaita* are placed on the fire in the hut of the deceased, whether old or young, married or unmarried.

For one day after the burial the person burying may not use his hands in eating, he eats from a piece of gourd, his head is half shaved on this day; all the mourners remain in or near the hut of the deceased for three days.

Should the deceased have been an old man one of his bullocks is killed, the entrails are examined for omens, and if auspicious the burier and wife of the deceased cut *tebenwet* sticks and prod the stomach of the animal; the right side of the bullock is eaten by the mourners, the left³ by the two persons mentioned.

The next day a sheep or goat is killed, again there is haruspication of the entrails and the fat is smeared on the body, ornaments and clothing of the mourners, the right side is eaten by them, the left by the same two persons.

¹ The hyæna is regarded with superstition, e.g. when its excreta is found on a cattle track all passers by throw branches and grass until a considerable pile is made; it is similarly inauspicious when found on cultivated ground. A few days after a body has been placed in the bush it is visited, and *tebenwet* grass is thrown upon the remains; if the hyænas and jackals have not done their work witchcraft is presumed and a search is made for the wizard.

² This is stated to be done with the deliberate intention of resembling a child *in ventre*, no suggestion was made in the necessary questions.

³ All animals are killed upon their left side, and are smothered by placing grass in the nostrils and holding the mouth; at a marriage, the bullock must be strangled by a rope in addition to smothering; cattle are sometimes killed by sticking a knife in the throat, of recent days.

After this the burier chews the root known as *cheroriet*.¹

The head of the senior wife is shaved by her eldest son on the fourth day after her husband's death and she shaves his head; all wives, brothers, sisters and children of deceased shave their heads, in addition males their beards, the same relatives of the wives do not shave, neither do grandchildren; the hair is thrown towards the rising sun.

The name of the deceased is not mentioned after death until a child is born to his family group when, should it cry when his name is called, it receives his name; the deceased is referred to as *kimaitet*, the dead one.

The widows of the deceased discard all ornaments after death if childless, if the mother of male children they retain the *karanet* armlet on the left arm, daughters retain the *karanet* on the right arm. The eldest son wears his garment inside out and ties it with *meneot* grass, which is also wound round male and female ornaments after a death in the family. On the death of her mother the youngest daughter puts her garments inside out, and the ceremonial mourning above is observed by those concerned. The widow cuts off the hem of her skirt, she wears her worst clothing for six days, and after this makes new clothing and adds a new hem. She may not wear the large *siabanek* earrings unless her son is circumcised otherwise she waits a year before wearing them again. The *sirimto* chain joining these two earrings may never be worn again, she may not go near young men and must speak in a whisper for six days, she may never re-marry or be a *moteriet* at a wedding. She has food brought to her during the six days and may not cook.

If the deceased was not an old man the ceremonial bullock is killed on the fourth day; this day is known as *Kaidet ap Karek*, the oiling of iron, the ornaments and weapons of the deceased being oiled with the fat.

On this day the eldest son of a deceased man climbs the roof of his father's hut and breaks off the *kimonjo koi*² stick from the apex of the roof and takes away the *rokiet* potsherd through which it protrudes; this is placed on the grave. The *maburaita* shrine is also broken down and some of its twigs are placed on the grave so as to point to the rising sun.

The huts of the tribe are circular with a conical grass roof, the roof space is ceiled by rows of withies, and is known as *taput*, it is used for storing grain; the *taput* is supported by props known as *toloita ap njor* on the east or man's side of the

¹ Also eaten by a man after killing another, after killing a lion or a leopard, after eating rhinoceros flesh, waterbuck, and on recovery from a fever. The waterbuck and rhinoceros, as also the zebra and topi, are regarded as unclean and may only be eaten in case of starvation. Possibly, the idea is that a man who has buried or killed another, or fought with a lion or leopard, or eaten unclean meat, or endured a fever has been nigh unto death.

² This is a thick piece of pointed wood of the *zmitot* (*Olea chrysophilla*) or *Chepchabayot* tree; it is placed so as to protrude through the broken top of a cooking pot. Hollis, *The Nandi*, p. 15, describes it as "frequently almost phallic in appearance"; there is no trace of phallism with the Kipsikis and the same ornament is placed over widows' houses.

hut, and *toloita ap koima*¹ on the west or woman's side of the hut; according as the deceased is male or female one or two of these props are taken and placed on the grave with the top towards the rising sun.

One or two of the bed props of a man are placed on his grave by the eldest son. Tobacco and a tobacco spoon² are placed on the grave.

The *loyet* beer bowl, the *sotet* milk gourd, the *ngecheret* stool of the deceased are chipped, the beer bowl is used afterwards, the milk gourd is used by the widow,³ the stool is taken by the eldest son who also takes his father's ornaments and weapons; two of the *rogorosiek*, long drinking straws, are put outside the hut of the dead man to rot, these have mouth-pieces, *keseget*, and two are given to friends, the rest being kept by the eldest son.

Members of the family may not have sexual intercourse until the shaven hair of the head begins to grow again; marriage and other ceremonies are postponed.

Persons who have died of anthrax—a common disease, as the tribe eats dead meat—are always buried and also smallpox victims, both are isolated during the illness.

If a man is killed in battle the body is not buried, as also when killed by wild beasts.

The details of illness, death, and burial would seem to show a definite belief in a re-birth in a descendant, while the prohibition against widows re-marrying is attributive to this pervading idea of a return. (Cf. Hollis, *The Nandi*, pp. 69-72.)

XXI.—INHERITANCE.

A widow may not re-marry. On the death of her husband she falls to his eldest brother, if there are more widows than one the brothers take in order of seniority; should there be no husband's brothers living they go to the sons of their husband's paternal uncles, failing these to a near member of the husband's clan, this only applies to women capable of bearing children. A widow is not strictly a wife to the man who takes her, for any children she may bear, by whomsoever begotten, take her dead husband's name, and on attaining maturity take the stock and its increase which their "father" left; if he had mature sons living at his death these post-mortem children have a claim to a re-division.

When a man dies his sons inherit his stock in equal shares; the stock is usually left with the elder brother, if married, until the other sharers marry, when they take their portion and its progeny.

¹ The woman sits and sleeps on the west side of the hut, and must always face the east or rising sun when cooking.

² Tobacco, snuff, is mixed with butter and poured into the nostrils by the men of the tribe.

³ A woman never during the lifetime of her husband either eats with him or from the same utensils.

This simple scheme is complicated by the fact that A, a husband, having twenty head of cattle, apportsions five to each of his wives, B, C, D and E, to their own use ; A dies leaving F and G sons by B ; F and G divide the stock placed to B's use but do not take any share in the cattle placed to the use of C, D and E ; these go with them to the relatives of A, to whom they happen to fall, and become the property of the children they may bear, if male.

Again, if B has two sons F and G, one married daughter H and one unmarried daughter J, F and G divide the cattle placed to B's use and the bride-price paid to A for their own sister H, and on the marriage of J her bride-price ; a son has a greater right than his father to his own sister's bride-price, the reason being that these cattle may be used by a brother for the bride-price of wives but not by a father ; bride-price is, however, paid to the father not the brother.

If B's children are girls and she is past child-bearing the cattle go to the eldest brother of A until she bears sons to the man who cohabits with her ; if she does not bear sons they fall to the eldest brother of A.

If A dies leaving no sons his brothers take, failing them A's step-brothers, failing them A's paternal uncle's sons, failing them A's paternal uncles ; this is, however, subject to the proviso in favour of sons to A's wife or wives subsequent to his death.

There are various presents of stock made to a son by his father when he has concluded his ceremonial seclusion after circumcision, and by his maternal uncle, *mama*, when that relative extracts his lower incisor teeth and pierces his ears ; these are the absolute property of the son.

Sons divide the personal ornaments, weapons, and honey barrels of the father ; the eldest son taking spear and shield, the next son the sword, failing sons this property follows the outline given above.

On the death of a woman her sons and daughters divide her ornaments, but if the husband is living he takes his choice of these, he may not, however, give them to another wife or any other woman ; the deceased's household utensils go to her sons, and failing them to her daughters, as also the food in her store, *tabut* ; the standing crops she has cultivated are divided between her husband and sons. The last-born mature son of a woman, who invariably buries her, takes his choice of those presents of goats and the like which she extracted from her husband when a bride, her hoe, her milk gourd, and her grinding stone.

There is no individual property in land ; growing crops are objects of inheritance and sale. (*Cf. Hollis, The Nandi*, pp. 72-73.)



FIG. 1.—LUMBWA MAN OF DORORO BLOOD.



FIG. 2.—LUMBWA RIDERS.



FIG. 3.—LUMBWA MARRIED WOMEN.



FIG. 4.—LUMBWA YOUTHS.

(Photographs by C. M. Dobbs.)

DUAL ORGANIZATION IN INDIA.¹

By GOVIND S. GHURYE, M.A. (Bom.).

DUAL organization has been described by Dr. Rivers as that where the whole population is divided into two exogamous groups, a man of one group having to marry a woman of the other.² The purpose of the present paper is to bring together available evidence to show the former prevalence, in Southern India, of the segmentation of communities into two exogamous sections.

There are three lines of attacking this problem. First, the terminology of kinship may be fruitfully explored; for the work of Dr. Rivers has abundantly proved that kinship-terminology has, in most cases, preserved for us past types of social organization in fossilized forms.³ Secondly, those special regulations of marriage which prescribe marital union between cross-cousins and bar one between parallel-cousins, should be investigated to see what light they can throw on the question under consideration. Thirdly, we must see whether the present-day social organization in Southern India retains any vestiges which can be satisfactorily explained only on the hypothesis of past prevalence of dual organization.

To take up the first line of attack: Dr. Rivers, whose loss we all deplore, drew our attention to the fact that some of the features of the classificatory system were such as could be derived only from dual organization of society.⁴ He pointed out that, first, one's mother's sister's children, father's brother's children and one's own brothers and sisters were grouped together under one term; secondly, mother's brother's children were classed together with those of father's sister. These features follow easily from a dual organization of society, and are hard to explain on the hypothesis of more classes than two. This choice of terms by Dr. Rivers to uphold his contention seems to me rather unhappy; for it might be contended that mother's sister's children and father's brother's children are grouped together with one's brothers and sisters just because mother's sisters are classed with mother, and father's brothers with father. Clearly, then, we must carry our analysis a step further back and try to see why father's brothers are classed with father, and mother's sisters with mother. As for the second set of terms, it must be pointed out that it has no separate value apart from what it may be shown to possess under the heading of cross-cousin

¹ I have to thank Dr. A. C. Haddon for some useful suggestions.

² *History of Melanesian Society*, vol. I, p. 17.

³ *Kinship and Social Organization*.

⁴ *Ibid.*, pp. 72-73.

marriage; for, as pointed out by Dr. Rivers himself,¹ in many of the classificatory systems of relationship mother's brother is classed together with father's sister's husband on the one hand and both with father-in-law on the other. Hence we expect the children of mother's brother and father's sister to be grouped together under one term. Secondly, owing to the fact that one term serves for both the mother's brother and the father's sister's husband as well as the father-in-law, this special terminology may be due to habitual practice of cross-cousin marriage without necessarily postulating dual organization. As a matter of fact, in many instances, as, for example, in the case of Southern India detailed in the sequel, the terms which are used for brother-in-law and sister-in-law also serve for mother's brother's children and father's sister's children. Nay, sometimes, as in the case of the Urabunna tribe of Central Australia, one term, "Nupa," stands for father's elder sister's daughters as well as one's wife; because there only restricted cross-cousin marriage is allowed, marital union being permitted only with one's father's elder sister's daughter. There are two other terms, one standing for father's younger sister's sons and wife's brothers and sister's husbands, and the other for father's younger sister's daughters and husband's sisters.² Among the Urabunna people, though they have many totems yet the marriage rules are such that the whole organization operates like dual organization with cross-cousin marriage.³ In order that this set of terms may be quoted as independent testimony, we ought to be able to show that they are such as cannot be derived from any other social phenomenon but that of dual organization. This, as far as I can see, is not the case. Hence we have to leave this set of terms for future consideration.

With this preliminary note, let us start with the analysis which we proposed above. Here we have to ask, granting that social conditions alone can rigidly determine kinship-terminology, what sort of social conditions could have led to the classification under one term of mother and mother's sisters. That the mother has quite special functions is generally recognized⁴; and hence we cannot account for this lack of distinction as due to absence of separate functions. Perhaps it may be remarked that the practice of sororate explains this peculiarity of terminology; under the regime of this practice one's mother's sisters are one's father's potential wives, and hence they will tend to be classed together with one's mother. To this it must be replied: first, as sororate has been very recently defined as the practice whereby when "there are several sisters in a family they are all regarded as the wives of the man who marries the eldest of them,"⁵ the fact that in the Dravidian languages of Southern India the elder and younger sisters of the mother are

¹ *Kinship and Social Organization*, pp. 44-48.

² Spencer and Gillen, *Native Tribes of Central Australia*, pp. 64-66.

³ J. G. Frazer, *Totemism and Exogamy*, vol. i, p. 176.

⁴ E. A. Westermarck, *The History of Human Marriage*, vol. i, p. 258.

⁵ R. H. Lowie, *Primitive Society*, p. 18.

distinguished as great mother and small mother cannot be explained on this theory, for the simple reason that under the practice of sororate there cannot be any elder sister of the mother. Secondly, a more fundamental objection to this theory lies in the fact that sororate itself requires to be explained, while dual organization is almost on the physico-social plane beyond which, in our search for the origins of social institutions, we may not be able to carry our analysis. Further, the feature of the mother's sisters being classed together with the mother does not stand by itself but is accompanied by the parallel feature of the father's brothers being grouped with the father. Any theory which fails to account for these two together, therefore, may be rejected without hesitation. The practice of sororate cannot explain the fact of one term standing for both the father and the father's brothers. The hypothesis of dual organization, on the other hand, satisfactorily accounts for the features. If a matrilineal community is divided into two exogamous sections, as children belong to their mother's section, they look upon their mother's sisters, who also belong there, as their own mothers; while the males of their mother's generation, but belonging to the opposite section, being the potential husbands of their mothers, are naturally looked upon as fathers. In a typical patrilineal society the mother, the mother's married sisters, the father, father's brothers and the children all belong, or come to belong, to the same section; hence the classification under consideration follows more easily. Therefore, the grouping together of the mother and her sisters on the one hand and of the father and his brothers on the other in kinship-terminology may be taken as an indication of the former existence of dual organization.

Now let us turn to Southern India and see whether the terminology of kinship in the Dravidian languages shows these features of classification. I think it better to subjoin a table first and then to discuss its real meaning.

Language.	Kinship-term.	English translation.
Canarese ¹	Doddamma (elder sister of the mother).	Great mother.
	Chikkamma (younger sister of the mother).	Small mother.
	Doddappa (husband of the first).	Great father.
	Chikkappa (husband of the second).	Small father.
	Doddappa (elder brother of the father).	
	Chikkappa (younger brother of the father).	
	Doddamma (wife of the former).	
	Chikkamma (wife of the latter).	

¹ *Mysore Census Report, 1911*; L. H. Morgan, *Systems of Consanguinity*.

As a natural consequence the children of these relations are denoted by the same terms as one's own brothers and sisters, with the usual distinction of elder and younger.

Language.	Kinship-term.	English translation.
Telugu ¹	Petalli (elder sister of the mother; wife of the father's elder brother).	Great mother.
	Pinatalli (younger sister of the mother; wife of the father's younger brother).	Small mother.
	Pettandri (father's elder brother; mother's elder sister's husband).	Great father.
	Pinatandri (father's younger brother; mother's younger sister's husband).	Small father.
Tamil ²	Periya tay (mother's elder sister; father's elder brother's wife ?).	Great mother.
	Seriya tay (mother's younger sister; father's younger brother's wife ?).	Small mother.
	Periya takkappan (father's elder brother; mother's elder sister's husband).	Great father.
	Seriya takkappan (father's younger brother; mother's younger sister's husband).	Small father.

The first thing to be noted in this list is that father's brothers and mother's sisters are distinguished from the father and the mother respectively only by the addition of an adjective meaning great or small, according as the person referred to is elder or younger than one's father or mother. Thus virtually father's brothers and mother's sisters are classed together with the father and the mother respectively. Not only this, but, as is to be expected as natural consequence of this grouping, father's brother's wives and mother's sister's husbands are classed with mother's sisters and father's brothers respectively. Therefore, if the argument elaborated above be granted, here we have a strong proof of the former existence of dual organization in the Dravidian region of Southern India.

The true significance of these terms of kinship can be better comprehended if we compare the parallel terms used in the Aryan languages of India. Here we will start with the Konkani dialect of Marāṭhi, because, as both geographically and linguistically it shows evident traces of Dravidian culture, it is likely to afford us a transitional stage.

Relation.	Konkani. ³	Marāṭhi.	Gujarāṭi.	Hindi. ⁴	Punjābi. ⁵
Father	Bāppā	Bāpa	—	Bāp or pitā	Peo
Father's brother ...	Bāppoliyo	Chudatā or Kākā	Kāko	(E.) Tāu (P.) (y) Chāchā	Tāyā Chācā.
Mother's sister ...	Māvaci	Māvaci	Māsi	Māosi	Māsi.

¹ Morgan, *op. cit.*; I have left out Morgan's transliteration-marks.

² Morgan, *op. cit.*

³ These Konkani terms I owe to the kindness of my friend Mr. V. S. Hejmādi.

⁴ U.P. Census Report, 1911; Punjab, *op. cit.*

⁵ *Ibid.*

The Sanskrit corresponding terms are, in order : Pitā, Pitrivya (one belonging to the father) and Mātṛishvasā (sister of the mother). First, it must be noted that the term for mother's sister in all the languages under review is clearly derived from the Sanskrit term for that relation, which, again, is purely descriptive. This is as we should have expected from what little we know of the social organization of the people of Sanscritic culture. They seem to have had the patriarchal family as the basic unit of their social organization, the existence of the clan proper being almost doubtful. Mother's sister, therefore, tended to be sharply distinguished from the mother by a term which showed her exact degree of consanguinity with the mother. But if the theory of culture-contact developed by Dr. Rivers and Prof. G. Elliot Smith be correct, then we should expect, from its geographical position, to find in Marāṭhi, and especially in the Konkani dialect thereof, traces of a transitional stage. As a matter of fact, we started with the Konkani terms in the hope that we shall discover some vestiges of the Dravidian system. Are our hopes, then, frustrated ? No ; we shall see later on that, though not the term for mother's sister, yet terms derived from it have preserved for us important clues. Suffice it to point out, for the present, the marked contrast between the Aryan and the Dravidian nomenclature. Given the patriarchal tendencies and the later development of so-called joint-family, the brother of the father will tend to be approximated to the father. This we find to be the case if we go into the etymology of the terms for father's brother. Thus Tān and Tāyā seem to be derived from the Sanskrit term Tāta, meaning father ; nay, in the United Provinces¹ father's elder brother is actually called Barā bāp, meaning " great father." The Konkani term is plainly connected with the term for father. The Marāṭhi term apparently seems to go against us. Here too it is only the appearance that is illusive, but the reality is quite different ; for Chulatā will have to be derived from the Prakrit Chullatāo, which, in its turn, has to be traced to the Sanskrit Kshudra tāta, meaning " small father."² Perhaps also Kākā and Chāchā will be proved to be ultimately derived from the Sanskrit Tāta. This partial non-differentiation of the father's brother from the father must have been facilitated by the contact of the Aryan people with the Dravidian system. Perhaps it might be contended that this grouping together of the father's brother with the father is of the same order as that of the Dravidian system. One argument against this contention is furnished by the fact that the parallel feature of the grouping together of the mother and the mother's sister is totally wanting in the Aryan system. A second and an equally strong argument is provided by the term for the wife of the father's brother in the Aryan languages. This person is denoted by one of the three terms Chāchi, Kāki, Chulati—all, as can be easily seen, feminine nouns formed from the terms for the father's brother. This is essentially different from the Dravidian system, where this person is classed with the mother and the

¹ *Census Report*, p. 236.

² J. J. Meyer, *Hindu Tales*, p. 25, f.n. 2.

mother's sister. This marked contrast will, it is hoped, bring into clear relief the true significance of the features of the Dravidian system discussed above.

Now we have to investigate what vestiges we can find in the Konkani and the Marāṭhi systems of the Dravidian system; for if we can establish that the Konkani system is such as would follow from a mixture of the Aryan with the Dravidian system, then we shall have strengthened our contention that the Dravidian system is fundamentally distinct from the Aryan one; and also we shall have gone far towards substantiating our theory about the genesis of the features under review of the Dravidian system. We have, therefore, to inquire whether there are any terms that lend themselves to a favourable interpretation. I subjoin a table of terms which seem to me to be valuable from this point of view :—

Relation.	Konkani.	Marāṭhi.	Gujerāṭi.	Bengālī. ¹	Hindi.	Punjābi.
M.S. ² Brother's son ...	Putanyo	Putanyo	Bhātrijo	Bhāipo	Bhatija	Bhatija
W.S. ³	Bhācho	Bhāchā	Do.	Do.	Do.	Do.
M.S. Sister's son ...	Do.	Do.	Bhānej	Bhāgne	Bhānja	Bhānevan
W.S.	Putanyo	Do.	Do.	Bonpo	Do.	Do.
M.S. Brother's daughter	Dhuvadi	Putani	Bhatriji	Bhāji	Bhatiji	Bhatiji
W.S.	Bhāchi	Bhāchi	Do.	Do.	Do.	Do.
M.S. Sister's daughter...	Do.	Do.	Bhāneji	Bhāgni	Bhānji	Bhānevin
W.S.	Dhuvadi	Do.	Do.	Bonjhi	Do.	Do.

To facilitate reference I will add a list, to be read in exactly the same order as the above, from the Dravidian languages :—

Canarese.	Telugu.	Tamil.
Maganu	Koduku	Makan
Sodaraliya	Menalludu	Marumakan
Do.	Do.	Do.
Maganu	Koduku	Makan
Magalu	Kuthuru	Makal
Sodarnasose	Menakodalu	Marumakal
Do.	Do.	Do.
Magalu	Kuthuru	Makal

Before embarking upon a discussion of the significance of these tables we must inquire into the meaning of the terms in the Aryan languages. Without entering

¹ I have to thank my friend Mr. Kshitićprasāda Chattopādhyāya for these terms.

² Man speaking.

³ Woman speaking.

into the details of etymology, it may be broadly stated, first, that most of the terms, with few exceptions in Konkani and Marāṭhi, which will be specially dealt with later on, are connected with the Sanskrit terms for these relations or their parents; secondly, that they have no reference to the sex of the speaker, the Bengali terms "bonpo" and "bonjhi" being no exceptions, for they have the same meaning as the corresponding terms used by the males, "bon" being only a more Pracritized form of the Sanskrit term for sister, "bhagini"; thirdly, they have reference only to the parents and the sex of the person referred to. The result is that these relations are denoted by terms which mean the son or the daughter of the brother or the sister, as the case may be. I emphasize this point here because it has got an important bearing on our discussion.

Now let us turn to the Dravidian terms to see how far they agree or disagree with the Aryan ones. The first observation to be made about these is that they depend, not only on the parent and the sex of the person referred to, but also on the sex of the speaker. The terms which a sister uses for her sister's children are used by the brother for his brother's children, which, in their turn, are the same as those used for one's own children either by a male or a female. The other set of terms, i.e. the terms which a brother uses of his sister's children and a sister of her brother's, properly belong to the subject of cross-cousin marriage and will be treated there. The peculiarity in the nomenclature just pointed out in the Dravidian system essentially distinguishes it from the Aryan system, and its causes must be sought for in a totally different social organization. As pointed out above in our discussion of the terms for the father and his brothers on the one hand, and for the mother and her sisters on the other, such a peculiarity of nomenclature follows naturally from a dual organization of society.

Next we must take for consideration some of the terms in Konkani referred to above. As is evident from the list, the Konkani system, inasmuch as it allows the use of the same terms for the brother's children when the speaker is a brother as those for the sister's children when the speaker is a sister, is identical with the Dravidian system. We must inquire whether these terms are the same as those used for one's own children as in the Dravidian system. The terms for son and daughter in Konkani are "put" and "dhu" or "dhuv" respectively. Now the terms "putanya" and "dhuvadi" are evidently connected with "put" and "dhuv" respectively, meaning "like the son" and "like the daughter," though we may not at present be able to point out the particular grammatical rules which explain the formations. Thus it must have been evident that the Konkani system differs from Dravidian in this particular set of terms only slightly. This small difference must have been due to the new Aryan influences. When in a system of kinship-nomenclature we find that a sister approximates her sister's children to her own, and yet we do not find the classification of the mother with her sisters under one term, clearly we have to acknowledge that we have here only the wreck of an

organization which in its fully developed form must have classed the mother with the mother's sisters, and thus must have been in all respects identical with the Dravidian organization. This wreckage must have been caused by the Aryan influence, the grouping together of the father with the father's brothers not being particularly repugnant to the Aryan ideas—nay, being actually favoured by the later development of the Aryan family—being retained. Therefore, the Konkani system is essentially a mixture of two distinct kinship-terminologies based on widely different social organizations. In the Marāṭhi terminology of the upper classes as given in the table above, we do not find any evidence of Dravidian influence. Nevertheless, we have some reason to think that the lower classes may still reveal in their kinship-nomenclature many Dravidian influences. Thus in the Central Provinces the term "putnya"—the form plainly tells us, though this fact is not expressly mentioned, that it comes from the lower classes—is both for the brother's son as well as the sister's son irrespective of the sex of the speaker.¹ All this is in exact consonance with the recent theories of culture-contact.

Having seen reason to think, from the evidence of the terms for the father's brother and the mother's sister, that dual organization must have formerly prevailed in Dravidian India, let us turn to another term of kinship. The term of kinship that I take for consideration is that for a step-child. A step-child may be the child of one's wife by her former husband or of one's husband by his former wife. In a matrilineal community with a developed family organization, as children belong to their mother's family, one's husband's children by his former wife are necessarily the members of a family different to one's own, while one's wife's children by her former husband belong to the same family as one's wife. In a patrilineal community, on the other hand, the children in both the cases belong, in general, to the same family, viz., that of their new father. Even if, therefore, we suppose (we shall later on examine this supposition) that common habitation in a family under one roof with concomitant responsibilities may lead one to look more and more upon one's step-children as one's own, and hence to class them together, we cannot explain, if we find it, the use of one term for one's own children and step-children alike in a matrilineal community. Only dual organization can explain such a feature in kinship-terminology; for in that type of social organization all the children of that clan, and that generation to which one's own children belong, are classed together with one's own children, irrespective of their family connections.

With this we may pass on to Dravidian India to see what evidence we get on this point. As a preliminary note I must add, without entering into the large question whether Dravidian India as a whole passed through the matrilineal stage, that some salient points from a large mass of collected data will be noticed in the

¹ *C.P. Census Report*, 1911, p. 147.

sequel, tending to establish the former prevalence of matrilineality in this region, and hence for the present discussion we may start with that assumption.

		Canarese.	Telugu.	Tamil.	Meaning.
M.S. } W.S. }	Step-son	Magamu	Koduku	Makan	Son.
M.S. } W.S. }	Step-daughter	Magalu	Kuthuru	Makal	Daughter.

To see clearly the implications of this feature of kinship-terminology, let us take an example of a matrilineal community with three intermarrying classes, A, B, C. Let us suppose a female "A" from the class A is married to "B" from the class B. The children of this marriage will belong to the class A. Now if their mother dies their father may marry a female either from the class A or from the class C, but he is not under any social necessity of restricting his choice to the class A. Let us suppose that he marries a female from the class C. His former children belonging to the family and the class of his old wife will have nothing to do with his new wife "C" or even with himself. As far as social organization goes, then, there is nothing that should tend to class, from the woman's point of view, one's own children with one's step-children. But with a dual organization of society it is altogether a different story; for one's second wife, in this arrangement, can come only from the same class as one's first wife, and hence, for the woman, under the classificatory regime one's step-children will always be classed with one's own children. If, therefore, matrilineality prevailed in Dravidian India, the evidence from the terms for step-children is such as to indicate the former existence of dual organization.

We have granted above, for argument's sake, the possibility of one's step-children being classed with one's own children in a patrilineal community, even if there prevailed no dual organization. We must now examine whether this supposition has any basis in fact by a reference to the kinship-terminology of the patrilineal people. First we shall see how the contiguous region of India where Aryan languages are spoken bears on this point. As already stated, ideas of a patriarchal nature have been rampant in that region; and hence, if the supposition made above be correct, then the Aryan terminology of kinship from this region ought to lend some support to it. Below I give a list of terms for step-son:—

Marāṭhī.	Bengālī.	Hindī.	Punjabī.
Sāvatra mulagā	Shotuto putra	Sautelā beṭā	Sakattar.

It is clear from the list that the Aryan system of terminology does not lend the slightest support to the supposition; on the other hand, it directly contradicts it. The same conclusion is forced upon us if we look through Morgan's lists of kinship terms for the other Aryan peoples, like the ancient Romans, the Greeks and the Slavs, among all of whom we know family organization of an intensely patriarchal nature to have flourished.¹ Thus the supposition made above has no basis in fact. Hence our task is much lightened; for if a section of the Dravidian population had been patrilineal and not matrilineal, the terms for step-children would equally well prove the existence of dual organization.

Having explored the first line of approach, we have next to take up for consideration cross-cousin marriage. Cross-cousin marriage has long been held to have been due to dual organization.² Dr. Rivers, in his standard paper on cross-cousin marriage in India,³ also held the same view. But later on he raised some objections against this theory. The objection that he raises is this: wherever cross-cousin marriage prevails, it is the first cross-cousin that is the proper mate, and not any cross-cousin in the classificatory sense; while the hypothesis of dual organization explains the marriage of the cross-cousins in the classificatory sense, it fails to account for this restriction to the first cross-cousin. He observes⁴: "The marriage usually takes place, not between cross-cousins in the classificatory sense, but with the daughter of the own brother of the mother or of the own sister of the father. If so, it is necessary to explain how the mere group-relationship, which is all that is implied in the marriage of a man of one moiety with a woman of the other in the dual organization, developed into the relationship of first cousin in our narrow sense which seems to characterize this form of marriage, and no one hitherto has suggested any kind of social machinery by which this development can have taken place. I confess that when dealing with the subject some years ago [he refers to his essay on cross-cousin marriage in India] the need did not even occur to me." I quote this passage because Prof. Westermarck, while commenting on the suggested connection between dual organization and cross-cousin marriage, has pointed out this difficulty as if discovered by his own logic and unknown to Dr. Rivers. I will quote the whole passage, lest I should be thought to misrepresent it. He says⁵: "Dr. Rivers has suggested that in India and elsewhere cross-cousin marriage is derived from the bisection of the community into two exogamous moieties or classes, such as is found in some Australian tribes; but apart from the significant fact that no such organization of society is known to have existed in India,⁶ it is difficult to

¹ Paul Vinogradoff, *Historical Jurisprudence*, vol. i, pp. 232 and 268.

² R. H. Lowie, *op. cit.*, p. 29.

³ *Journ. Roy. Asiatic Soc.*, 1907, p. 623.

⁴ *History of Melanesian Society*, vol. ii, p. 122.

⁵ *Op. cit.*, vol. ii, pp. 78-79.

⁶ As a matter of fact, Mr. R. V. Russell pointed out its existence among the Gonds in 1916, in his book on the tribes of the Central Provinces.

understand why it should have led to the marriage of first cousins to the exclusion of marriages between other members of the two exogamous moieties." He goes on further to point out that, in Melanesia, Dr. Rivers ascribes the institution to some special features. Now it is evident from the passage quoted from Dr. Rivers that he was himself painfully conscious of the difficulty—nay, as far as I can see, he was the first to rudely shake the implicit faith in the dogma of dual organization of an influential body of anthropologists. I do not wish to inquire into the validity of the objection raised; that opens up the large question of the origin of cross-cousin marriage, to which I hope to return some time in a separate paper. Suffice it for our present purpose to point out that Dr. Rivers, in his last pronouncement on the subject,¹ was prepared to grant that cross-cousin marriage "has probably arisen in most, if not in all, cases out of" the dual organization of society.

Therefore, if we establish that in Southern India cross-cousin marriage was or is prevalent to a very large extent, then we have made a *prima facie* case for the former prevalence of the dual organization, unless it is shown by the dissentients that this marriage practice, in the region under review, is the result of some special circumstances. Perhaps it may be replied that such a special case has been made out by Mr. F. J. Richards.² The explanation forwarded by Mr. Richards amounts to this: when Dravidian India passed from mother-right to father-right, the practice of cross-cousin marriage arose as the result of a concession to the sentiments of the peoples accustomed to mother-right on the one hand and of the new-fangled ideas about property fostered by the introduction of father-right on the other.³ Without going into details, I may point out that, even if the explanation be granted, it fails to account for the prevalence of this custom among such matrilineal communities as the Nayers.⁴ This awkward fact is, I think, quite adequate to establish that the question of the origin of the cross-cousin marriage in India is still an open question. With this we may proceed to the inquiry of the actual prevalence of the practice in India.

To prove the former practice of cross-cousin marriage we may invoke the aid of kinship-terminology, and incidentally I have alluded above to some terms. I cannot enter into an elaborate discussion of these terms for reasons stated above, nor is it quite necessary for our present purpose to take up this task. We have decisive evidence for the actual practice of cross-cousin marriage in present-day India, and need not merely depend upon an inference about its former existence. For the data on this point I may refer the reader to the paper of Dr. Rivers already referred to, and more particularly to the Census Reports of 1911 for Mysore, Bombay,

¹ Hastings, *Ency. of R. and E.*, article on "Marriage," p. 426(A).

² *Mun*, for 1914, pp. 194-8.

³ *Salem District Gazetteer*, vol. i, pt. 1, p. 134.

⁴ K. M. Panikkar in *Journ. Roy. Anthropol. Inst.*, 1918, p. 263; and also *Report of the Malabar Marriage Commission of 1891*.

and the United Provinces. From these accounts it will be clear that cross-cousin marriage has a fairly wide distribution in Southern India and also crops up here and there even in Northern India.

This second line of approach, then, leads us to the same conclusion as the first.

Now we have to turn to the actual segmentation of communities into two exogamous divisions.

The Tottiyans, a Telugu cultivating caste, settled in Madura District, are divided into eight exogamous sections, "each of which intermarries only with one of the remaining" seven.¹ Writing about the Yerracolla subdivision of the same caste, Mr. E. Thurston says that they have fourteen septs, which for marriage purposes are divided into two classes of seven each. All the septs in one class, being regarded as blood-relatives, can marry only in the other class.² The first arrangement, though it does not look like the usual type of dual organization, is for the purposes of marriage identical with that kind of organization. The Malaiyalis of Salem District are divided into a large number of exogamous clans, called "vaguppus." They are generally arranged into classes or groups, which alone are allowed to intermarry. The clans forming any one group are known as "dāyādi" or brother clans, and marriage between them is strictly prohibited. Thus one subsection has seven clans which are arranged in two classes, one comprising five clans and the other two. A member of any of the five clans of the first class can marry only in any of the two clans of the second class. Another section of the Malaiyalis seems to have two classes consisting of three and two clans respectively, with similar restrictions on marriage. The Pachai-Malaiyalis have about fifty clans, "arranged in about eight 'dāyādi' groups." Whether each of these eight groups can marry with only one of the remaining seven we are not told.³ The Gollas, a Telugu caste of cattle graziers, are divided into eight endogamous groups. Each of these groups, it seems, has seven exogamous "gotras," "associated with plant totems," which are divided into two "dāyādi" groups of four and three "gotras" respectively. The marriage restrictions conform to the type above alluded to.⁴ The Uppiliyans have nine exogamous clans, two of which, forming a "dāyādi" group, from the incomplete account available, can marry into any of the remaining seven clans, which in their turn are divided into "dāyādi" groups.⁵ The Koravas, a gipsy tribe, recognize six sections: Kavadi, Menpadi, Mendra-kutti, Sattupadi, Uyyalu, and Bandi. In one account in which only the first four sections are taken notice of, it is stated that the first two, forming one "dāyādi" group, can marry only into the other two sections, forming another such group. When all the six sections are

¹ *Madura Dist. Gaz.*, vol. i, p. 107.

² *Tribes and Castes of Southern India*, vol. vii, p. 188.

³ *Salem*, *op. cit.*, p. 153.

⁴ *Ibid.*, p. 172.

⁵ *Ibid.*, p. 185.

taken note of, Kavadi and Uyyalu are represented as forming one "dâyâdi" group marrying into the other four, forming another such group.¹ In Bastar, the Mâria Gonds are divided into two great sections, comprising 90 and 69 septs respectively. The septs of a section all regard themselves as "Bhâiband" or "Dâdâbhâi," i.e. paternal cousins, and marriage between them is prohibited. Members of one section have to look for their mates in the septs of the other section, because they stand to them in the relation of "Mâmâbhâi," i.e. maternal cross-cousins.² This is said to be the case with most of the wild Gonds.³

This will suffice to show the wide range of dual organization in India, though it is highly probable that these are not the only cases and that with more intensive study many more cases may come to light.

All these peoples seem to be patrilineal. To inquire whether these people ever passed through the stage of mother-right will lead us far afield; but as I have assumed above the former prevalence of mother-right in India, I shall bring some points in support of that view without going into details.

First, in the *Report of the Malabar Marriage Commission* is given a long list of the castes that follow the rule of descent through the females in Malabar. To this list are to be added seventeen families of the Nambutiri Brahmins from North Malabar, which, contrary to the usage of the caste, adhere to the same system.⁴ To the castes from Malabar, Travancore and Cochin we must add those from South Canara, like the Bants, Mogers, Halepaiks, etc.⁵ Among the Billavas there are exogamous septs running in the female line, and the office of the headman passes to the sister's son of the holder at his death.⁶ Lastly, I may mention the case of the Komatis, who are so well known in connection with the rigid practice of the cross-cousin marriage, leading to revolting customs, amongst whom the "gotras" of the maternal uncles of the bride and the bridegroom must not be the same before marriage can take place.⁷ This restriction becomes intelligible only on the hypothesis of the former prevalence of matrilineal descent amongst this large caste. There are various customs connected with birth, naming, initiation, and marriage which, if properly interpreted with the help of details, I think, will point in the same direction. But I shall deal with this on another occasion.

The foregoing discussion will have made it clear that we have good reason to believe that in Southern India there was a wide prevalence of dual organization with matrilineal descent.

P.S.—Col. T. C. Hodson has recently pointed out the prevalence of dual organization in North-Eastern India (*Primitive Culture of India*, p. 85).

¹ Salem, *op. cit.*, p. 197.

² R. V. Russell, *Tribes and Castes of the Central Provinces*, vol. iii, p. 65.

³ C.P. Dist. Gaz., "Chhattisgarh Feudatory States," p. 47.

⁴ Madras Museum Bulletin, vol. iii, p. 47.

⁵ Manual of South Canara, pp. 160, 168, 173.

⁶ Thurston, *ibid.*, pp. 246-7.

⁷ Mysore Census Report, 1911, p. 100.

MAN'S NASAL INDEX IN RELATION TO CERTAIN CLIMATIC CONDITIONS.

By ARTHUR THOMSON, *Lee's Professor of Anatomy, University of Oxford*, and
L. H. DUDLEY BUXTON, *Lecturer in Physical Anthropology, University of Oxford*.

[WITH PLATE VI.]

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A.—INTRODUCTORY.

On the 11th of August, 1913, one of us read a preliminary communication, before the Anatomical Section of the International Medical Congress held in London, on "The Correlation of Isotherms with Variations in the Nasal Index."¹ Unfortunately, owing to the war, the promise then given to pursue the matter further has been long delayed.

In the note above referred to it was held that in view of the results obtained by a survey of the nasal indices available of the inhabitants of the American Continent, there was evidence that the greatest nose-width was found in the vicinity of the "heat equator," and that as we passed north and south thereof, there was a gradual narrowing of the nasal aperture, as exemplified by specimens from Baffin's Bay in the north, and Tierra del Fuego in the south. A map was shown in which there appeared a general correspondence in the numerical value of the nasal indices obtainable of those living north and south of the equator in corresponding isothermal zones.

These observations were interpreted as dependent on the respiratory function of the nose as distinct from its use as a sense organ.

¹ Arthur Thomson, "The Correlation of Isotherms with Variations in the Nasal Index," *Proceedings of the Seventeenth International Congress of Medicine*, London, 1913. Section I. "Anatomy and Embryology," part II, p. 89.

B.—ANATOMY.

From the anatomical point of view it has long been the custom to describe the nasal fossæ as consisting of two regions, an olfactory and a respiratory; the former being limited to the narrow slit-like space bounded laterally by the middle of the superior concha and medially by the corresponding area of the septum.

The remaining parts of the nasal fossæ are relegated to the respiratory tract. Various suggestions have been made concerning the manner in which the respiratory stream is directed through the fossæ. Thus Schiefferdecker assigns to the *limen nasi* (a relief just within the lateral aspect of the nostril which corresponds externally to the interval between the lateral and alar cartilages of the nose), the function of directing the stream of air along a groove which lies between it and the tubercle of the septum, a localized thickening of the mucous membrane overlying the middle of the septum opposite the head of the middle concha; this groove he proposed calling the *sulcus respiratorius*. H. Meyer assigned a similar function to the elevated ridge of mucous membrane (named by him the *agger nasi*) which runs forwards and downwards from the free anterior end of the middle concha towards the bridge of the nose, there to be lost on the lateral wall of the fossa. This, in conjunction with the shallow fossa called the atrium, which lies above the *limen nasi* and anterior to the middle nasal meatus, would certainly seem to provide a convenient channel for the direction of the inflowing stream of air.

It is well to remember that owing to the presence of the *limen nasi* the passage leading from the vestibule in front to the cavity of the nasal cavity proper behind is somewhat constricted; to this Zuckerkandl applied the term "inner nostril." Obviously, in the living it is the size of this channel which will determine the volume of the air admitted.

The reader may be reminded that these are structures which can only be recognized in recent specimens, and are not seen on the macerated skull, with the possible exception of a ridge on the medial surface of the frontal process of the maxilla, which underlies the mucous ridge referred to above as the "*agger nasi*." This bony ridge, when present, is considered by some anatomists to represent the naso-turbinal which is found in some animals.

In conformity with the subdivision of the nasal cavity into an olfactory and a respiratory region, the mucous membrane undergoes certain modifications. We are concerned here only with the lining of the respiratory parts of the nasal cavity. This consists of a membrane of varying thickness, overlaid by a layer of columnar ciliated epithelium, and abundantly beset with mucous and serous glands. A considerable amount of diffuse adenoid tissue is also present.

The transition zone between the ciliated respiratory mucous membrane and the mucous membrane lining the olfactory region is not always well defined, and, according to the statements of some observers, is apparently subject to individual variations.

The varying thickness of the respiratory mucous membrane is seemingly correlated with its functional activity, for, according to P. Jacques,¹ the rule holds good that the thickness of the nasal mucous membrane depends essentially on the degree of contact of its different parts with the stream of inspired air. Thus the borders of the middle and inferior conchæ are covered with an especially thick layer of mucous membrane, measuring as much as 3 or 4 mm. in thickness. The central area of the septum is also thickly covered. There is a noticeable reduction in the thickness of the mucous membrane where it lines the nasal meatuses and the remaining parts of the respiratory tract, a change which is also associated with a reduction in the number of the contained glands. Of special interest is the fact that, in those places where the respiratory mucous membrane is thickest, the venous vessels, as was first pointed out by A. von Koelliker,² form a cavernous plexus akin to that characteristic of erectile tissue, and hence often referred to as the nasal *corpora cavernosa*.

It was Kallius³ who first suggested that these structures might probably be of use in raising the temperature of the inspired air, a suggestion which is supported by their disposition, since they occur particularly in those parts of the mucous membrane which are brought more immediately into contact with the inflowing stream of air, viz., over the head, free border, and tail of the middle concha, and over the central area of the septum. Their absence is noteworthy in the meatuses, over the floor, and in the ethmoidal region. Further confirmation of their heating power is supplied by the experiment quoted by Tigerstedt,⁴ in which air taken in at one nostril at 10–12° C., and passed out at the other, entrance to the pharynx being closed, comes out warmed to 31° C. and saturated with moisture. If the air outside be 0–4° C., it is warmed to 27–5°.

It thus appears that nature provides vascular and glandular arrangements which have as their object, as stated by Jacques,⁵ the provision of a favourable degree of heat and humidity for the air inspired.

Whilst these facts have been recognized by anatomists, unfortunately it happens that hitherto, as far as we know, anthropologists have not applied them to the consideration of the form of the nasal aperture as displayed in the various varieties of mankind.

The Respiratory Function.

In considering the respiratory function it is universally acknowledged that the nose is the main respiratory channel by which air is passed to the lungs. Under normal conditions the mouth is only used for this purpose exceptionally, either when the demand for air is exceptionally urgent or when the nasal passage is blocked by secretion.

¹ Poirier, *Traité d'Anatomie*, 1912, vol. v, p. 909.

² *Gewebelehre*, 2nd Aufl.

³ Bardeleben's *Handbuch der Anatomie des Menschen*, Bd. V, Abt. 1, Teil 2.

⁴ *Text-book of Human Physiology*, 3rd ed., English translation, London, 1906, p. 323.

⁵ Poirier, *loc. cit.*

It is a well-known fact that children who have for long been the subjects of adenoid growths in the naso-pharynx exhibit defects in the development of the nasal channels, which are the outcome of the imperfect use made of these passages in association with the normal respiratory function. Such children, if untreated, become habitual mouth breathers, with the result that the nasal passages never acquire their proper expansion, and the hard palate its proper proportions.

But the mere admission of air to the lungs in sufficient quantity is not all that is necessary. The temperature and moisture of the air thus admitted must be regulated, so as to cause the least amount of disturbance to the delicate tissues of the lungs. If too cold it must be heated; if too dry it must be moistened. It is these functions which we have to consider.

The mechanism whereby the changes are effected is provided by the highly vascular mucous membrane which overlies the turbinal bones (*conchæ*). A vertical section through the nasal fossæ reveals the fact that the space provided for the flow of respiratory air is much less than is at first suspected. The inward projection of the turbinal bones from the lateral wall of the nasal fossæ naturally reduces the space available for the passage of air, the more so when we remember that these bones are covered, especially in the respiratory region, by a mucous membrane of considerable thickness, in some cases amounting to several millimetres.

It is obvious from an examination of the arrangement of the parts that the column of air flowing through the nose must be broken up into shallower streams which pass through the clefts left between the convoluted surfaces of its mucous membrane-covered *conchæ*; and if, as was suggested by Kallius,¹ this arrangement is devised to raise the temperature of the air as it passes over the warm mucous membrane, it stands to reason that the smaller the volume of the stream of air, and the more slowly it flows, the more readily will it absorb heat from the structures over which it passes.

The arrangement is comparable to the coil of steam-pipes frequently employed for heating houses. If we wish to raise the temperature of a room we can do so in two ways—either by reducing the inflow of cold air which passes over, or in between, the pipes, or by increasing the area of the heating surface by adding another stack of pipes. There is every reason to believe that Nature effects the same purpose by much the same means. If the entering column of air passes through a wider channel, it is obvious that it will flow more freely and in greater volume, and be less subject to the influence of the warm mucous membrane; whereas, if the passages through which it has to flow are narrower, its volume will be split up into thinner streams, its course will be slower, and consequently it will absorb more warmth from the surface over which it passes. The same holds good as to the extent of the heating surface; any increase in this will naturally lead to

¹ Bardeleben's *Handbuch der Anatomie des Menschen*, Bd. V, Abt. i, Jena, 1905.

an increase in heat-giving efficiency, consequently the varying vascularity of the mucous membrane becomes an important factor.¹

Proportions of Nasal Cavity and their Correlations.

These observations naturally involve the consideration of each of these factors in the discussion of the question. Unfortunately, this investigation is beset with difficulties. For some of our data we must have recourse to the skeleton, but the appearance of the macerated skull fails to give us any information regarding the condition of the mucous membrane. Any attempt to estimate the capacity of the nasal fossæ in the skull with any degree of accuracy is unsatisfactory, because of the tendency of the fluid employed to invade the surrounding air sinuses. Nor can we obtain any reliable measures of the turbinal areas without first bisecting the skull in sagittal section. Any estimate formed by rhinoscopic examination in the living is necessarily restricted in its application, whilst sections on the cadaver are unsatisfactory for the same reason, and also because the conditions after death are no reliable criteria of those which existed during life. The preparation of casts made with fusible metal involves the destruction of the surrounding structures, and is thus impracticable in valuable specimens. For these reasons, the only working data at our disposal are the values assigned to the nasal index in the living and on the skull.

In this connection it is important to compare the *index of the nasal aperture*, as computed from the maximum measures of the height and breadth of that opening on the cranium, with the *nasal index*, which, be it remembered, is based on the proportion of the width of the nasal aperture to the distance between the nasion and the alkanthion, or, more accurately, between the nasion and a line tangential to the lower border of the nasal orifice in the cranium, a measure which includes the length of the nasal bones.

Here again a difficulty arises, for the comparison of the nasal indices only expresses a difference in the proportions of the respective measurements, and does not necessarily give us reliable information as to the size of the orifice, for a nose of platyrrhine proportions may, by what it gains in breadth, lose in height, while a leptorrhine nose may gain in height what it loses in breadth, and so provide as

¹ The comparative study of the anatomy of the nasal orifice in animals other than man is beyond the scope of this paper, but the following quotation is of interest. Commander Wild, in his report on the voyage of the "Quest" (*Geographical Journal*, vol. lxi, No. 2, February, 1923, p. 86), states that Dr. Macklin, the surgeon to the "Quest," made observations which show that the apparatus for warming the air inhaled is very highly developed in the seal tribe. "The turbinate bones, instead of being small and covered by a uniform membrane containing blood-vessels, are larger and composed of bars like a radiator covered with a rugose membrane so designed as to give the largest possible warming surface. The function is obvious, for they rise after a period below water to exhale violently and inhale a great rush of ice-cold air, which, if taken unwarned to the lungs, would have a much greater cooling effect than would be beneficial to a warm-blooded animal."

large a channel for the entrance of air. In the leptorrhine nose, however, as will be shown later, the respiratory passages are more split up, and consequently the volume of air is not so bulky, but is broken up into thinner streams.

In order to test the comparative values of the nasal index and the aperture index, a series of measurements was made on 190 male crania in the University Museum, Oxford, and upon 52 crania of both sexes in the Department of Human Anatomy. The larger male series covers specimens from all parts of the world, the criterion for inclusion having been simply the fact that the nasal bones and the superior maxilla were in perfect condition. How widely divergent these specimens were is shown by the big standard deviation of the nasal index, which is 5.4. The smaller series are all ancient Egyptians, and, in spite of the fact that the sexes are mixed, the standard deviation of the nasal index is only 3.4.

The measurements taken were: Nasal height (from the nasion to a line tangential to the lower margin of the nasal aperture), aperture height (from the rhinion to the same point), nasal breadth, and palato-maxillary breadth. The following indices were calculated: Nasal index $\left(\frac{\text{nasal breadth} \times 100}{\text{nasal height}} \right)$, aperture index $\left(\frac{\text{nasal breadth} \times 100}{\text{aperture height}} \right)$, and aperture area $\left(\frac{\text{nasal breadth} \times \text{aperture height}}{2} \right)$, i.e. the nasal aperture was treated as an isosceles triangle, the breadth being taken as the base. This is, of course, only an approximation.

Correlations were then worked out. The correlation between the nasal index and the aperture index is, in the case of the miscellaneous male crania, extremely high, having a value of over 0.9, and in the case of the Egyptian crania it is rather lower, being just over 0.75. The difference in the correlation coefficient may be explained in several ways. First, the Egyptian series is extremely small, and any irregularities, even though in themselves slight, would make considerable difference to the correlation. Secondly, the mixing of males and females has been shown in many cases to affect correlations very considerably. Thirdly, it is possible that the inter-racial and intra-racial correlations may be different.¹

The high correlation between the nasal index and the aperture index in the case of the 190 male crania of mixed races seems, however, sufficient to suggest that from a knowledge of the nasal index we could predict with a fair degree of certainty the value of the aperture index. If this be so, we may be fairly confident, from our knowledge of the nasal indices of many races, that we are not going wrong in neglecting the aperture index. In other words, anything that is true of the nasal index will be true of the aperture index.

¹ Tschepourkowsky (*Biometrika*, IV, p. 166) found that the correlation coefficient between the nasal indices of men and women belonging to twenty-five groups was as high as +0.836. Cekanowsky, using the same material independently but including twenty-seven groups, had a rather lower correlation of +0.688 ± 0.054. A sexual correlation for groups of crania does not appear to have been calculated.

The correlation between the nasal index and the *aperture area* was next worked out. It would appear, from casual observation, that leptorrhine skulls would have a small aperture area, and *vice versa*. Our observations on the series of miscellaneous male crania, however, show no correlation whatever. It is possible that our calculation of the aperture area is wide of the mark; but supposing that there had been even a small correlation it should have been brought out in our figures.

In the absence of any accurate method of recording the capacity of the nasal respiratory tract, the best we can do is to submit for the reader's inspection two photographs of extreme forms of nasal aperture, taken actual size with a telephoto lens, so as to reduce as much as possible the misleading effects of perspective (Pl. VI. Fig. 1).

For all practical purposes these may be regarded as orthographic figures of the structures represented. The two extremes of form are shown. The one (on the left) exhibiting the narrow nose with a leptorrhine nasal index of 39·4 is an Algonquin Indian from the neighbourhood of Lake Erie. The other (on the right) with the wide nose, having a platyrrhine index of 55·4, is a North-west Australian. A glance at the two figures reveals the fact that, in the specimen with the narrow nose, the channels between the conchæ laterally and the septum centrally are much narrowed, and more split up by the projecting conchæ than is the case in the Australian specimen, in which, be it noted, the middle concha, though still *in situ*, is not seen, partly owing to the circumstance that it is obscured by the shadow, but also largely dependent on the fact that it is not nearly so well developed. It is clear that in this specimen there is a much more open and free channel for the passage of air, and consequently the inflowing stream will be less broken up and therefore less subjected to the qualifying action of the mucous membrane overlying the turbinals.

That these are features commonly displayed by skulls of the leptorrhine and platyrrhine types is evidenced by the photographs of crania shown in Pl. VI. Fig. 2. Unfortunately it is not always easy to procure examples where the turbinal bones are still intact, for in the processes of natural decay, and the removal of skulls from burials of different sorts, these delicate bones are apt to be broken and lost, hence the choice of specimens is limited. The crania represented are amongst the most perfect that could be found in the Oxford collection, and, as will be seen, they repeat, with individual variations, most of the broad features exhibited in Pl. VI. Fig. 1, which specimens are here again included.

An extensive examination of the skulls at our disposal has been made, and the results on the whole are confirmatory of the above observations in respect of the modifications in the size of the main respiratory channel as correlated with the increase in the numerical value of the nasal index.

It may be assumed, therefore, that not only does the nasal index record the proportional width of the nasal aperture, but that that proportion also indicates a corresponding difference in the capacity of the respiratory channels.

Respiration in Relation to Habit and Climate.

It would be interesting to compare, in the living, the vital capacity of the lungs with the development of the nasal channels, for it appears reasonable to suggest that a man engaged in work which entails continued muscular effort would, under normal conditions, either develop a freer respiratory tract or else have recourse to deepened breathing. It is possible that we may account in this way for the individual variations that may be met with.

It might also be of interest to ascertain whether those who from youth upwards have been engaged in employments which demand a greater tax than usual on the respiratory system, as for instance players on wind instruments, or glass blowers, exhibit any individual increase in the capacity of their nasal fossæ as compared with the majority who make no such demand on their breathing apparatus.

It may generally be conceded that active exercise during childhood and youth is the best preparation for such developments within the nose as are best adapted to fulfil the functions of a perfectly adjusted apparatus. These will include not only the capacity necessary to transmit an adequate supply of air, but according to environmental conditions will provide for the adequate heating and moistening of the inflowing stream.

It is recognized by physiologists that in the tropics man becomes more dependent upon respiratory ventilation to regulate the heat loss from his body. For good ventilation of the lungs it is necessary that the residual air be kept as near the physiological mean as possible; this can only be done when the individual preserves his power of breathing out to the fullest extent. When the residual air is small in amount, the respiratory response to exercise is deepened breathing without increase in rate; when the residual air is large, and therefore the vital capacity diminished, the response to exercise is panting. One of the dangers to the white man in the tropics, especially where the wet bulb is high, is that he finds it difficult to get sufficient exercise, and consequently loses the advantage gained to respiration through the use of his abdominal muscles, which have lost their tone. In the tropics also the power of losing water from the respiratory tract is undoubtedly of considerable physiological importance. In air containing the highest relative humidity, the existence of a free passage of entry is of advantage, in order that sufficient air may be breathed in to absorb water from the respiratory tract. For these comments on the physiological aspects of the question we are indebted to Colonel Flack, M.D., of the Royal Air Force.

Thus, it would appear that, apart from the consideration of temperature, the dryness of the atmosphere exercises quite a characteristic effect. Anyone who has to sit for long in a steam-heated railway carriage soon recognizes this, and as the subsequent observations make clear, there seems abundant evidence to suggest that such a condition, if long continued, as happens amongst the dwellers in those regions which are extremely dry, promotes an increased discharge from the mucous

membrane of the nose such as will counteract the drying effect of the inflowing stream, and so abate the deleterious effect it might otherwise have on tissues of the lungs. The conditions under which man lives are so diverse that the interactions of temperature and humidity are not necessarily one and the same. We may have high temperature combined on the one hand with a dry atmosphere, on the other with a varying amount of humidity. So also low temperatures may be similarly affected. Which of these particular factors, in any group of people occupying different climatic areas, exercises the paramount influence, it is difficult to determine. There seems reason to believe that temperature is the more dominant, though this, as will be seen later, may be modified by varying degrees of humidity.

Unfortunately, too, the seasonal variations of climate have to be taken into account as a modifying influence. In climates subject to extremes of temperature we may not be on safe ground in basing our comparison on a mean temperature, which, in numerical value, may equal that of a region in which less variation from the mean is recorded.

In the one case, the habits of the people may be such as to help them artificially to overcome the extremes to which they are subjected; whilst, on the other hand, the dweller in a climate of which the mean of temperature is the same, may be more the child of Nature and need have less recourse to artificial means.

If our hypothesis be sound we are justified in assuming that mesorrhine people are those who dwell in a climate in which the air is neither so cold nor so dry as to injure the lungs.

If we reduce the temperature of the air to a point at which its contact with the lung tissue would be harmful, then it must be adequately heated either by artificial or by natural means; if the latter, this can be effected either by reducing the volume of the stream, splitting it up and slowing its flow, or by increasing the heating surface. If, again, we raise the temperature above what may be regarded as the average requirement, then the freer the access of the inspired air the better, since it has already reached a temperature which can do no injury to the lungs.

C.—CLIMATE.

In estimating the relationship between climate and the structure of man we are concerned not so much with the causes of temperature and humidity as with their actual distribution.

Temperature.

A glance at any isothermal map will reveal certain main facts. First, although the temperature generally falls from the Equator to the Poles at an average of 1° F. for each degree of latitude, this ideal condition is found only in oceanic areas at sea-level; large land masses tend to upset the equilibrium. Secondly, the seasonal temperature in the tropics is fairly stable. The greatest changes take place in the centre of large continental areas. For instance, in parts of Siberia the July isotherms are 60° F. and the January isotherms — 60° F.

In the tropics the diurnal changes, especially in regions far from the sea, tend to be very great. In parts of the Sudan, for example, the maximum day temperature may be over 100° F., and in exposed places the minimum temperature just before dawn may fall as low as or lower than 40° F.

The southern summer and winter are more intense than the northern, because during the former period the earth is in its nearest position to the sun (perihelion), and during the latter period at its aphelion. What the southern hemisphere gains in intensity during the summer it loses in time, because the sun is eight days longer in the northern hemisphere than in the southern. The distribution of land masses in the two hemispheres is very different, with a corresponding effect on the climate. In the southern hemisphere there is a larger proportion of water, tending to make the extremes of temperature less marked, with a result that in spite of the greater intensity of the sun's rays at certain periods of the year the summers are on the whole less torrid and the winters milder.

The mean temperature, as worked out from a series of diurnal means (which diurnal means have in most cases been arrived at by adding the maximum and minimum daily temperature and dividing it by two), will therefore have an entirely different significance in oceanic and in continental areas, the different significance depending entirely on the degree of variability of the temperature, both diurnally and annually—that is to say, the difference between the daily maxima and minima and the difference between the hottest and the coldest months. In dealing with our figures, however, which necessarily represent a large series of observations from all over the world, it has been necessary to accept the mean annual temperature, as it would hardly have been possible, without introducing needless complications, to include the variation as well as the actual mean.

A further limitation must be made to judging the temperature from isothermal maps. These maps are compiled from such observations as are available at present: they are unfortunately much fewer than could be wished. Secondly, the temperature is reduced to sea-level, which militates against their application to people living at high altitudes.

In taking temperatures for comparative purposes, therefore, we have not relied on isothermal maps, but have taken the actual reading for mean annual temperature at the station—or, in some cases, the mean of several stations—which seemed best to represent the climatic conditions under which various peoples are living. In some cases this must necessarily be unsatisfactory, but in every case an attempt has been made to get the best available reading.

Humidity.

The moisture of the air has an important effect on its temperature. In a moist atmosphere less heat is lost by radiation than in a dry. For purposes of the present study, however, humidity has been considered separately, and in the stations chosen there is so little correlation between temperature and relative humidity taken in bulk that they may be considered as almost independent. The factor in the moisture of the atmosphere that is important for our present purpose is not the absolute humidity, but the "relative humidity." This may be simply explained: In a dry climate, where the relative humidity is low, conditions are such that the atmosphere can hold more water than is available; in a damp climate there may be no more actual aqueous vapour present than in the driest deserts, but temperature conditions may produce a closer approach to saturation. For example, in the Kufra Oasis in the Libyan Desert, Rolf found that in August the absolute humidity (vapour pressure) was 4.5 mm. (which corresponds closely to the damp winter air in Western Europe), with a temperature of 102° F. the relative humidity was 9 per cent., whereas, with the normal winter temperatures of Western Europe such a degree of absolute humidity would correspond to a relative humidity of 80-90

per cent. The relative humidity, then, is the percentage ratio of the actually observed vapour pressure, and the vapour pressure at saturation. If h denotes observed vapour pressure, that is the amount of water in the air as measured by a psychrometer and H the vapour pressure at saturation, then the relative humidity will be $\frac{h \times 100}{H}$. The physical effect may be noted in a snow-field. In the sun high temperatures will be experienced, and H , which increases rapidly with temperature, will be high. The breath is immediately absorbed by the atmosphere, and a fall of snow is of no consequence as the clothes rapidly dry. In the shade, however, the temperature is low, several degrees below freezing; H therefore falls rapidly, and the breath congeals in icicles on the moustache. A second example will make the point clearer. In very dry cloudless tropical areas during the day everything is so dry that a sponge becomes hard in a few minutes. At night, however, the temperature falls rapidly and there is a heavy dew.

As a contrast we may compare the mean relative humidity for January and July at Puerto de Anco (Chile) and Timbuku :—

Puerto de Anco—					7 a.m.	8 a.m.	1 p.m.	2 p.m.	9 p.m.
January	...	...	...	...	—	77	—	74	78
July	...	...	...	...	—	76	—	77	80
Annual mean	...	...	...	...	—	75	—	73	78
Timbuku—									
January	...	...	...	...	27	—	16	—	26
July	...	...	...	...	74	—	39	—	60
Annual mean	...	...	...	...	43	—	21	—	30

It will be seen that in an "oceanic climate" such as that of Puerto de Anco the relative humidity remains comparatively stable, whereas in the centre of a continent the variations are immense.

In arriving at a figure for correlation purposes we have taken the mean annual relative humidity as expressing the average conditions. It can be shown that the mean is the most representative condition, but where there is great variation—as, for instance, in the centre of large continents and in desert areas—it would hardly appear that the mean relative humidity was correlated to the requirements of mankind in the same manner as the mean relative humidity of a stable character such as we find in oceanic areas.

Relation between Relative Humidity and Temperature.

There are other difficulties due to the relationship of the relative humidity and the temperature. We have already shown that the radiant heat of the sun (sun temperature) will cause the air to be dry and absorbent, whereas the shade temperature may in extreme cases be so low as to cause the moisture in the air to approach to saturation. Certain difficulties may, therefore, reasonably be expected in comparing those countries which enjoy a freedom from clouds with those whose sky is normally overcast for a great deal of the year, even though shade temperature is recorded.

It may be argued that the correlation between temperature and humidity is of no importance to the present enquiry; it will, however, be seen that if we are to correlate the nasal index with two variates, it is necessary to know the relationship not only of the nasal index and each of the variates, but also of the two variates to one another. It would appear, then, that the relationship of relative humidity and temperature will be great in those regions where the absolute vapour pressure is constant, and small where it is not; and that, as we are concerned not with the meteorological but with the biological aspect, the correlation will be the result of

chance—the coincidence of meteorological stations with stations where anthropological measurements have been made—rather than the expression of a real condition, but that by taking a wide number of stations with widely diverse climatic conditions we may get an approximately correct result. If we range the world widely enough we shall have little correlation between these two factors; if we take similar types of climate—that is, where the absolute vapour pressure is similar—the relative humidity will be negatively correlated with the temperature, but where the temperature is constant the relative humidity will not, of course, be correlated with it unless the absolute vapour pressure is also constant.

Correlations between Climate and Nasal Index.

Relative humidity may be justifiably correlated with nasal index; both are percentage ratios and strictly comparable. As regards nasal index and temperature it might be argued that to correlate a ratio and an absolute measurement is not entirely satisfactory; while admitting the weight of such an argument, it can be shown by a “product moment” table that the correlation is sufficiently linear to make the result significant.

We can rely, therefore, on the correlation between the nasal index and temperature, and that between the nasal index and humidity, pointing the way to the actual state of affairs—that is to say, if in one case we have a high correlation—the two factors are probably in actual fact dependent the one on the other. The combined correlation between nasal index on the one hand and temperature-and-humidity on the other, will probably also point the way to an actual fact. We do not use the word “probably” in the loose sense of a qualifying adverb expressing a vagueness of mind and a desire to shirk real issues, but in the sense that we speak of the “law of probabilities,” meaning that in betting parlance “the odds are in favour of.” As we shall show later, the actual odds are—

6 to 4 in favour of our being able to predict the nasal index from a knowledge of the temperature;

6 to 4 against our being able to predict the nasal index from a knowledge of the relative humidity;

7 to 3 in favour of our being able to predict the nasal index from a knowledge of both temperature and relative humidity;

if we have correctly associated the people with an appropriate climate.

In some cases the contrast of habitat between allied peoples appears to produce an alteration in the nasal index. The most striking example of this can be found in the case of the Kanets, to which attention has been drawn by T. H. Holland.¹ The Kanets of Kuln, living in a fertile valley in the Punjab, give a mean nasal index of 74.1 (sixty persons measured); the Kanets of Lahoul, living 10,000 feet up on the barren sides of the mountains, have a nasal index of 66.4 (thirty persons

¹ *Journ. Roy. Anthropol. Inst.*, 1902.

measured). Unfortunately, exact meteorological data are not available, but we may assume that at the higher altitudes the temperature is appreciably cooler.¹

D.—CORRELATION: NASAL INDEX AND CLIMATE.

The material utilized in this paper is given in Appendix I. It has been collected in as large series as possible. The temperature records are those published in the various text-books, especially Hann's *Lehrbuch der Meteorologie*,² but references have been made to the original Meteorological Reports. For the greater part of the data on relative humidity we are indebted to Mr. H. O. Beckett, Reader in Geography in the University of Oxford, but original authorities have also been consulted. It is unfortunate that there still remain a number of records of nasal indices for which no exact meteorological data can be discovered.

Considerable difficulty was experienced in deciding what figures were really comparable. First, even where both the meteorological and the anthropological data were taken in the same place, it is of importance to know whether the persons on whom the anthropological measurements were made came from the place where they were measured, or happened to be there on military service, or for some similar reason. Again, so many anthropological data are grouped ethnologically or even politically that we frequently meet with groups described, e.g. as "soldiers from all Italy," or Toureg "from the Sahara." The data go to show that there are local variations in the nasal index which often appear to be closely related to local climatic conditions, and for this reason we have tried as far as possible to avoid averaging climate, and have given the actual data from stations near the various peoples.

In order to measure the actual numerical relationship of the relative humidity and the temperature (each separately and/or both taken in conjunction) to the nasal index, correlation tables have been constructed by the "product moment" method, and coefficients of correlation calculated.

Of the correlations calculated for our data, the correlation between nasal index and temperature is by far the greatest, the coefficient being 0.6291 ± 0.033 . The correlation between nasal index and humidity is not great, 0.4188 ± 0.050 . But if we take into consideration the fact that correlations between parts of indices of

¹ One of us recently observed a similar phenomenon in the neighbourhood of the Valley of Mexico. Indians who appeared to belong to the same racial stock were meeting in the market place of a small village, which lay on the mountain side in a neutral zone between the hot tropical jungles of the Terra Caliente and the colder temperate climate of the plateau. The Indians who came up from the steaming lowlands were very noticeably more platyrrhine than those from the colder, drier atmosphere of the highlands, and could be differentiated by observing the form of the nose.

² *The Climates of the Continents*, by W. G. Kendrew, was unfortunately not published until after the bulk of this article was written.

the same body are often less than this, even the latter result is of weight.¹ The correlation between temperature and relative humidity in the places where our anthropometric data were collected is, as might be expected, both low and negative, the figure being -0.0671 ; on the whole there is a tendency for the hotter places to be slightly drier. The actual relationship of relative humidity to temperature has been discussed above, but the result of our correlation table is important, because it shows that we have on the whole included in our tables types of climate which are not only cold and dry, or hot and moist, combinations which would give a high positive correlation, but also various intermediate types. The low correlation also shows us that, at least as far as our data are concerned, we may treat the temperature and the dampness of the air as independent factors. If the nasal index be considered in relation to temperature-and-humidity taken in conjunction, the correlation is slightly higher than that between nasal index and temperature alone, being actually 0.7238 ± 0.0259 .

In order to apply experimental proof to our correlation tables, coefficients of regression were next calculated. They are as follows:—

$$\text{Nasal index} = 0.4610 \times \text{temperature} + 43.95.^2$$

Tabulating the most frequently recurring temperatures (beyond which the formula should not be used) with the nasal index calculated from this formula, we arrive at the following results:—

Observed temperature ...	50	60	70	80	90
Calculated nasal index ...	67.0	71.6	76.2	80.8	85.4

It is hardly to be expected that in every case our observed nasal indices will agree closely with our calculated nasal indices, and in the case of extreme values of

¹ In this connection the inter-racial correlation between the nasal index and the cephalic index has been discussed by Jacob, Lee, and Pearson (*Biometrika*, vol. ii, p. 353). They come to the conclusion that "platyrrhine characters are inter-racially associated with dolichocephaly, and *vice versa*, in quite a marked degree," the results obtained being:—

$$\text{Correlation coefficient, C.I. and N.I.} = \begin{cases} -0.20160 & \text{Risley's data.} \\ -0.32639 & \text{Deniker's data.} \end{cases}$$

These are *inter-racial* correlations. With *intra-racial* figures the results are much the same:—

$$\text{Correlation coefficient, C.I. and N.I.} = \begin{cases} -0.2282 & \text{Murni tribe, Chittagong Hills.} \\ -0.2392 & \text{Oron tribe, Chota Nagpur.} \end{cases}$$

In the former case it is possible to object that the association of platyrrhine and dolichocephalic characters is due to the fact that most of the long-headed races live in tropical climates. By "most" we do not mean the number of individuals, but rather the number of tribes and other divisions which we are compelled in the present state of anthropology to count as a unit in any inter-racial correlation table. Our data would seem to suggest that in this case there is a climatic factor that is affecting not only the nasal aperture but also the cephalic index.

² Working out an actual example, the temperature at Roseoff (Brittany) is given a mean annual value of 52°F . The calculated nasal index is therefore 67.9. Collignon gives the observed nasal index of seventy living Bretons as 67.5.

heat or cold, dryness and dampness, our calculated value will be liable to differ considerably from our observed value. Using the normal formula for calculating probable errors, the probable error in this case would amount to a difference of about three units in our calculation, using round numbers.

It will be seen, then, that in predicting the nasal index from the temperature alone we are apt to make considerable errors. Let us now make use of the more complicated formula, and take both temperature and relative humidity into account in calculating the nasal index. Such a formula will be:—

$$\text{Nasal index} = 0.4834T + 0.2525H + 24.91.$$

The following example will serve to illustrate the use of this formula. The nasal index of fifty-three male Bishareen is given as 74.4. The climatic conditions for the area in which these people live are: relative humidity, 55 per cent.; temperature, 75.8° F. Applying our formula, the calculated nasal index will be 75.4. Were we, however, to use the formula for temperature alone, we should get as our calculated nasal index 78.9. This is a good example of a hot dry climate.

As an example of a hot moist climate Garrett found an average nasal index of 85.67 on eighty-seven Javanese. The relative humidity of Java is 83 per cent., the temperature 78.4° F. Using the double formula we get a calculated nasal index of 83.8, whereas the nasal index calculated from the temperature alone is 80.1.

A cold dry climate shows similar results. Fifty men from the Chiloe Archipelago in South America had a nasal index of 71.9. The humidity is given as 82 per cent., and the temperature as 53.6° F. The double formula gives a calculated nasal index of 71.5. The nasal index calculated from temperature alone is 68.7.

In a cold and comparatively dry climate like that of Baghdad, where the humidity is given as 59 per cent. and the temperature as 72.6° F., we should expect from the double formula, a nasal index of 74.9, and from the temperature formula alone a nasal index of 77.4. Measurements of thirty-seven Jews from Baghdad gave an observed value of 75.0, which exactly coincides with the first result.

It will be seen that in those cases where the temperature alone gives a bad result, we find extremes of humidity, and by using the double formula we are able to get a result which coincides more nearly with the actual observation.

The results obtained from a use of the coefficient of regression may be put in another way. The relative influence of temperature and humidity on the nasal index may be shown by comparing the regression coefficient of nasal-index-and-temperature with the regression coefficient of nasal-index-and-humidity. The respective formulae are:—

$$\text{Nasal index} = 0.4610 \times \text{temperature} + 43.95,$$

$$\text{Nasal index} = 0.2284 \times \text{relative humidity} + 60.01,$$

where temperature is measured in degrees Fahrenheit and relative humidity per cent.

Taken as a general rule it appears, therefore, that an increase of 2° F. is accompanied by an increase of one unit in the nasal index, and that an increase of 5 per cent. relative humidity is accompanied by an increase of one unit in the nasal index, when either factor is considered independently. Taking both factors into consideration, and making use of the formula given on p. 106, viz.:—

$$\text{Nasal index} = 0.4384 \times \text{temperature} + 0.2525 \times \text{humidity} + 24.91$$

it will be seen that if we increase both temperature and humidity by one unit each, the nasal index will increase by 0.8 of a unit; again, if we increase the temperature by one unit and decrease the humidity by one unit, the nasal index will increase by 0.2. This indicates that if temperature and relative humidity are pulling different ways, changes in the temperature will count more than changes in the humidity.

We find that where the temperature is low and the air dry, the nasal index is low; when the temperature is high but the air dry, the dryness of the air tends to produce a narrow nose. The temperature is, however, a dominant factor, and there are in this category some very broad noses, which form an exception to the formula.

When low temperature is combined with high humidity the nose is narrow to medium—that is to say, the humidity will account for a slight broadening of the nose.

Exceptions to Formula.

There are a series of exceptions to our formula, though not to the general rule. We can find one example—Egyptian Jews—of the association of a narrow nose with high temperature. In this case the humidity is extremely low, and further it is not certain that the people in question have been long in the country.

There are further exceptions in South-Eastern Asia. The noses here are broad, ranging between 83 and 86 in nasal index, but it would appear that the relative humidity and temperature are so high as to suggest that we might expect a nasal index of 90. The meteorological data are unfortunately rather scattered here, so that it is difficult to be certain that the formula is being correctly applied.

Generalizing, the exceptions to our formula may be analysed into three main groups, and some special cases which require particular attention.

First, a group of dwellers in tropical conditions; second, the dwellers in the centres of continents; and third, town dwellers. There is a fourth class of exceptions which we think may be legitimately considered, namely, those with whom unsuitable meteorological data have been associated owing to lack of more complete material.

In the tropical group the noses are broader than would be expected from the formula. They are consistently so, and in no way destroy the validity of our general position. It is possible also that in the selection of the temperature of Dualla as

a typical "West Coast" temperature we have minimized the actual conditions, but in any case not sufficiently to account for the difference.

The clearest example of desert dwellers proving an exception to the rule occurs in the case of the Australian aborigines. These were not included in our original series owing to lack of meteorological evidence. Spencer and Gillen give the nasal index of forty-two natives whom they have measured as 100·8. The relative humidity at Alice Springs is 43 per cent.¹ and the mean annual temperature 65·4° F. Comparing this with the nearest parallel in our series, Assuan, we find that Assuan is considerably drier and warmer, 37 per cent. relative humidity and 78·6° temperature Fahr. If we turn to a world isothermal map we find that conditions are very different in the two places. The centre of Australia lies within the isothermal range contour of 81°, a condition that is not reached in Africa except in the north-west Sahara. Moreover, in winter (southern summer) a maximum is reached in Australia of over 113° F. It would appear that the mean annual temperature minimises the actual conditions. On the west coast of Africa, where similar but not such extreme cases occur, we have already shown that the mean annual temperature gives too low a figure.

The list of towns which are exceptions is a long one. In all these cases we have taken the climatic conditions, where available, of the town where the people were measured. In some cases this is certainly far from their original habitat. The towns are :—

- (1) Sibsigar (in Assam).
- (2) Colombo.
- (3) Poona. In this case two series are included, one from Poona alone, where the formula is too small, and one where the data came from Bombay and Poona, where the combined formula is too great.
- (4) Kosseir. The Bishareen and Ababdeh measured at Kosseir both have different nasal indices, one of which is not very different from what might have been expected at Kosseir. The combined result, however, is wrong. Both tribes have a wide range which does not correspond very closely in climatic conditions with Kosseir.
- (5) Tinnevely.
- (6) Bombay. There are several series from Bombay, all from the Census reports. Again in this case we do not seem to be justified in taking a single town as representing a district.
- (7) Darjeeling. The data are actually stated to belong to Nepal, Sikkim and Darjeeling, within which area every variety of climate occurs, from tropical to almost Arctic.

¹ This figure is probably unreliable, as the relative humidity is very variable in the centre of Australia.

- (8) Ahmedabad.
- (9) Smolensk.
- (10) Venice. Moro's data for Italian soldiers gives nasal indices for "Venetians." As a trial, the temperature of Modena and the relative humidity of Venice, which were available, were used.
- (11) Baku. The data from Baku do not appear to correspond very closely with inland conditions, no doubt owing to its position on the Caspian.

There remain other exceptions. In the case of the Wanyamwezi an attempt was made to get representative figures from inadequate meteorological data. We are inclined to believe that this exception is due to a bad choice of data. This has certainly been the case in dealing with the Siamese. Both our stations are on the coast of Indo-China, and were only chosen in default of better. They do not represent Siam, nor again can measurements on ninety-three individuals be said to be representative of so large an area. We are also inclined to lay little stress, from a general study, on twenty-seven "Goranes," whose habitat is stated by Verneau to extend from Tripoli to Lake Chad. Similar difficulties occur in the case of "Indo-Aryans" from Rajputana and the Punjaub, and the meteorological data from Turkestan and Kuldja do not seem at present to be sufficient for wide generalizations.

It will be seen, then, that apart from data from towns—in the sense that towns have been the centre where measurements have been made—the only important exceptions to our generalization lie not so much in a failure to comply with our general statement as to agree exactly with the regression formula. The latter, however, is merely a means to an end and of only empirical importance.

The difficulty of obtaining satisfactory data has prevented the application of our formula to the Eskimo. It is of importance to note, however, that Duckworth's measurements on ten Eskimo¹ give the low average for the nasal index on the living of 64·1. Fürst and Hansen's measurements² on 345 crania give an average of 42·99. We have reason to believe that the climatic conditions to which these people are subjected are extreme cold combined with a considerable degree of moisture.

Application of Correlation Coefficients to Crania.

Using the same methods which were applied in the case of the living, product moment tables were constructed to find the relationship between the nasal index on crania and temperature-and-humidity. The general law appears to hold good, with certain very important differences. The correlation between nasal index and temperature alone is still high:—

Correlation, nasal index (crania) and temperature, $0\cdot5234 \pm 0\cdot0495$.

¹ *Studies in Anthropology*, p. 198.

² *Crania Groenlandica*.

The correlation between nasal index on crania and relative humidity is, however, very small, so small that it would appear as though, on the basis of the data before us, the relative humidity was an unimportant factor. We found, however, very great difficulty in many cases in collecting reliable relative humidity data, and it is always possible that our figures have not as much weight in this particular instance as could be wished.

Correlation, nasal index (crania) and relative humidity, 0.1123 ± 0.0673 .

When we take both factors into consideration it is natural that we should not expect to find a very great improvement in the correlation, although we shall probably slightly decrease the probable error.

Correlation, nasal index (crania), temperature-and-humidity, 0.5533 ± 0.0472 .

The lower correlations in the case of crania may be explained in various ways. The most important points appear to be: first, it is often extremely difficult to ascertain the exact provenance of a series of crania, and not infrequently a single series may have been collected from a fairly wide area. Secondly, in the case of the living, it has been possible absolutely to eliminate the female sex; in the case of crania, although every effort has been made to confine our attentions to the male sex, we cannot absolutely be positive that no female specimens have been included. There are indications of differences in the nasal index between the sexes, although sufficient data are not available for actual comparative purposes (*see note*, p. 97). Thirdly, the number of individuals in the groups of crania is far less than in the groups of living; this is of less consequence, however, because cranial observations can be made more accurately. Fourthly, the actual variation of the nasal index on crania is very much less than on the living. A larger number will, therefore, tend to concentrate about the mean.

Owing to the low correlation it was not thought worth while to construct a regression formula expressing the relationship between nasal index (crania) and relative humidity. We have, however, constructed one for nasal index and temperature, and one for nasal index and temperature-and-humidity:—

$$\text{Nasal index (crania)} = \text{temperature} \times 0.1673 + 39.50.$$

$$\text{Nasal index (crania)} = (\text{temperature} \times 0.1782) + (\text{relative humidity} \times 0.0896) + 32.52.$$

These reconstruction formulae cannot be considered nearly as reliable as those constructed to calculate the nasal index on the living, the correlation in the case of crania being lower. Nor again is there any great advantage in employing the second formula, except in those cases where climatic extremes are found—for example, great heat combined with extreme dryness.

Tabulating the most frequently recurring temperatures (beyond which limits the formulæ should not be used) with the nasal index calculated from the formula for nasal index and temperature alone, we arrive at the following results :—

Observed temperature	..	50	60	70	80	90
Calculated nasal index	..	47·87	49·54	51·21	52·88	54·55

These data are not absolutely comparable with the data on the living (see p. 105), because, except in a small number of cases, it has not been possible to obtain series of nasal indices on the living and on crania from the same places, where the climatic conditions were known. To a certain extent, therefore, our correlations on the crania may be considered to be an independent series of observations.

Correlation between Nasal Index Crania and Nasal Index Living.

The data which we have already recorded show clearly that there must be a high correlation between the nasal index on crania and on the living. Although an estimate of the numerical value of such a correlation could be obtained by comparing our two sets of data, it was felt that such an estimate was not entirely satisfactory. Two other methods remained : one for calculating the intra-racial correlation by taking observations on corpses, and the other by taking an inter-racial correlation from all the races where observations were available both on crania and on the living. The former investigation, based on 18 ♂ corpses, gave a correlation coefficient of $0·495 \pm 0·120$. Owing to the difficulties of technique and the small number available, no great stress can be laid on this figure.¹ An inter-racial correlation was obtained from a series of fifty groups of measurements of crania and of the living from the same place. This series includes representatives of the principal types of mankind, and may be considered fairly representative of the human race. The numerical value of the correlation coefficient between the nasal index (crania) and the nasal index (living) on these fifty groups was $0·808 \pm 0·033$. Such a high correlation can hardly be purely fortuitous, and taken in conjunction with our other observations, namely, the relationship of the nasal index, both on crania and on the living, to climatic conditions, may be safely used as evidence to suggest a close relationship between the two indices.

¹ In this connection reference may be made to the work of R. Havelock Charles (*Journ. of the Asiatic Soc. of Bengal*, vol. lxiii, 1894). He took a series of measurements on sixty-two "subjects" (fifty-four ♂ and eight ♀) belonging to various Indian castes, afterwards removing the soft parts and again taking the diameters. His results led him to the conclusion that the nasal index of the head and the nasal index of the skull were in no respect comparable. But a correlation table constructed from the measurements given by him for the fifty-four males showed a considerable degree of correlation, the numerical value of the coefficient of correlation being actually $0·612 \pm 0·057$.

Reconstruction Formula, Nasal Index (Living) from Nasal Index (Crania).

This calculation enables us to proceed to a reconstruction formula whereby we can gauge the nasal index on the living from an observed nasal index on crania. This regression formula is:—

$$\text{Nasal index (living)} = \text{nasal index (crania)} \times 2.327 - 38.68.$$

Tabulating our results for the most frequently occurring nasal indices:—

Observed nasal index (crania)	..	..	45	50	55
Calculated nasal index (living)	..	..	62.62	78.25	89.88

This table must be used with caution. In the first place the regression coefficient has a big probable error (over 0.16), and in the second place it cannot be used for individuals, but is only applicable to groups. It would appear, however, to be of service in comparing prehistoric material with modern living people. As a test case the nasal index on a series of Neolithic crania from Malta were examined. The observed nasal index was 47.17. This would give us a calculated figure for the probable nasal index of living Maltese in Neolithic times of 71.67. This formula is not applicable in a transposed sense—that is to say, it should not be used to estimate the nasal index on a group of crania from a knowledge of a group of living people. For this purpose another formula could be constructed, but we have not quoted it, as it is of no value for the present investigation.

E.—APPLICATION TO PREHISTORIC PEOPLES.

If we accept the conclusion that the numerical value of the nasal index is correlated with the climatic conditions, it follows that we must recognize that this feature in man's morphology is determined by environmental conditions, and is not to be considered as something necessarily apart or distinctively characteristic of race, except in so far as it affects equally those who live under like or similar climatic conditions.

This being so, the nasal index loses much of its significance as a purely ethnic character, and is to be interpreted largely as evidence of the habitat occupied. This by no means implies that as a factor in the determination of race it loses in value in known existing conditions; it merely indicates that as it is a feature dependent on climatic conditions it may, and doubtless does, undergo marked modifications when these environmental conditions are altered. That such changes may be slow in their effect is what we might expect from a consideration of the facts so far as we know them, but none the less the results, if long delayed, must be as certain. In our opinion the light which the acceptance of such a view sheds on the physical characteristics, in respect of this feature, in fossil man during prolonged and indefinite periods in the history of the earth is of much interest and importance. Roughly speaking, a platyrrhine nose has hitherto been regarded as the attribute of the

negroid race, the leptorrhine variety being regarded as characteristic of the European stock. It cannot have escaped the notice of those who have considered the question that there is a very definite correlation between pigmentation in pronounced degree, which is undoubtedly to be accounted for by reference to climatic conditions, and the extremes of nasal form here indicated.

In considering the matter so far as it affects the question of those fossil remains which have been discovered in certain geological strata associated with definite cultural periods, an attempt has been made to identify the remains in terms of race according to the physical characters which they display, and the culture with which they are associated. In cases where the crania discovered still preserve the characters of the face, stress has been laid upon the proportions of the nasal aperture as expressed by the nasal index. In so doing, the variations met with in the width of the nasal opening have evidently been accepted as a criterion of race, without regard to the climatic conditions under which those peoples lived. To such an extent has this been carried that attempts have been made to associate them with modern types. Thus Professor Sollas, in the suggestive speculations elaborated in his most attractive volume *Ancient Hunters*, associates the human remains of the Mousterian Age with the present-day living aboriginal Australians, which "of all races make the nearest approach to the Mousterians" (p. 161). So, too, he claims, with much evidence in support, that "Mentone was inhabited in Aurignacian times by a race allied to the Bushmen" (p. 268); whilst, in dealing with Magdalenian man, he discussed the resemblance of skulls of this type to the present-day Eskimo. In summing up the evidence adduced by Professor Testut in regard to the Chancelade skull, Professor Sollas says, "the osteological characters of the Eskimo, which are of a very special kind, are repeated by the Chancelade skeleton so completely as to leave no reasonable doubt that it represents the remains of a veritable Eskimo who lived in Southern France during the Magdalenian age" (p. 376).

Now, as judged from the associated fauna and flora of the respective periods, the climate must have undergone very decided changes. Thus the Mousterian period includes an inter-glacial period, with a fairly hot and humid climate, rather resembling parts of present-day Africa north of the Sahara. It is interesting to note that the Grimaldi skulls associated with this epoch both exhibit platyrrhine noses, having indices of 54.35 (?) ♂ and 63.63 ♀.¹ A cold glacial period is also ascribed to the Mousterian Age; with this is usually associated the platyrrhine skull (nasal index 55.7) from La Chapelle aux Saints. From our standpoint it would appear that this type of individual might more appropriately have been assigned to the warm Mousterian period.

The climate of the Aurignacian period, as inferred from the fauna and flora, is described as cold and dry, being gradually replaced by a more temperate climate.

¹ Verneau, *Les Grottes de Grimaldi*, vol. ii, Monaco, 1906, p. 168.

Of the skulls available for this period the following are arranged in order of the numerical values of their nasal indices :—¹

	Nasal index.	
Cro-Magnon 1 ♂	45·09	} Leptorrhine.
Barma Grande ?	46·29	
Barma Grande 2 ♂	47·17	
Lautsch, Moravia	48·00	} Mesorrhine.
Grotte du Cavillon, Mentone ♂	50·00†	
Cro-Magnon ?	51·51	
Grotte des Enfants ♂	56·86?	} Platyrrhine.
Combe Capelle ♂	Platyrrhine	

This would seem to suggest that there is a progressive ascent in the numerical value of the index, or, in other words, that the nose widens as the climate gets warmer. The instances given are too few, and the precise relations to the climatic conditions so doubtful that it is hazardous to draw any definite conclusions; it is noteworthy, however, that the examples quoted would generally fit the changing conditions of the climate, and that, so far as recorded, the width of nose does not reach the extreme found in the case of the Mousterian skull of the aged (negroid ?) female of Grimaldi (63·6).

In the Magdalenian period, which is generally considered to have been cool and dry, gradually becoming moister and warmer, we have but few examples from which to determine the nasal proportions. Testut assigns a leptorrhine index of 42·5 to the Chancelade skull; and Seligman and Parsons, though unable to compute the index of the Cheddar skull, yet give a low measure for the nasal width, which would suggest that it too would fall within the leptorrhine group. Both records would well accord with the suggestion that these were examples taken from people who lived in the more rigorous periods of that age.

The only other fossil skull in which we have an opportunity of estimating the nasal index is that from Gibraltar. In his description of the Gibraltar skull, Professor Sollas² gives the index of the *nasal aperture* as 95·65, and compares it with the largest index hitherto recorded in other races, viz., that quoted by Topinard³ as given by Broca, a record of a nasal index of 72 met with in two Hottentot skulls. The inference is unfortunately misleading, since Professor Sollas is clearly referring to the index of the *nasal aperture*, expressing presumably the proportion of the width to the height from the nasal spine to the rhinion, whilst Broca's record is of the value of the *nasal index* as derived from the proportions of the nasal width to the nasal height measured from the nasal spine (or from a horizontal line

¹ Verneau, *Les Grottes de Grimaldi*, vol. II, Monaco, 1906, p. 86.

² *Philosophical Transactions*, vol. cxcix, B, 1908, p. 331.

³ *Éléments d'Anthropologie générale*, 1885, p. 293.

corresponding to the lower edge of the anterior nasal aperture) to the nasion. These indices are, therefore, not comparable. As taken from the cast the nasal index of the Gibraltar skull works out at 65.09. Unfortunately, the data necessary for assigning this skull to any definite period are lacking, though Sir Arthur Keith regards it as belonging to the Mousterian Age.¹ Judged by the criterion of the nasal index there seems every reason to associate it with a warm climate.

F.—APPLICATION TO LATER PEOPLES.

The same considerations which we have applied in an historic sense—that is to say, to changes of climate in the *same* locality, taking place during perhaps a very long period of years—might perhaps also be applied in a geographic sense—that is to say, where people of the same ethnic type have migrated from one climate to another. Up to the present we have not succeeded in collecting data which will enable us to estimate how long a period is needed to bring about an adjustment between anatomical features and environmental conditions in the case of a migrating people. In our tables we have attempted to prove that in India there is a close correlation between the nasal index and climate. The evidence collected seems to justify a belief that it will be necessary to restate Risley's dictum of the relationship of caste and nasal index. He has shown that the majority of the narrow-nosed higher-caste peoples are comparatively recent immigrants from the north-west, whereas many of the lower caste broad-nosed tribes have lived for an unknown period in the extreme tropical climate of India. It seems reasonable to suggest, on the basis of our figures, that we have here not a real racial distinction so much as a climatic distinction, and that the lower castes from their longer residence in an extreme climate, have anatomically reached a state of equilibrium, whereas the more recent narrower-nosed castes have not been sufficiently long under their present conditions to be entirely adapted to their surroundings. If this hypothesis be correct it may be that here we shall have an opportunity, by comparing historical data with anthropological observations, of arriving at a tentative conclusion as to the time required for an immigrant people to acquire the type of nose which appears to be best suited to the country into which they have migrated.

G.—SUMMARY.

Summarizing the conclusions which have been arrived at in the foregoing pages, our evidence leads us to the belief that a platyrrhine nasal index is associated with a hot moist climate, and a leptorrhine nasal index with a cold dry climate, the intermediate conditions being associated with hot dry and cold moist climates. There is a positive correlation both on living males and on crania between the nasal index and the temperature. On living males there is also a positive correlation

¹ *Journ. Roy. Anthropol. Inst.*, vol. li, 1921, p. 68.

between the nasal index and relative humidity. On crania this correlation, although present, is small.

In order to test these results we have calculated reconstruction formulæ, whereby from a knowledge of temperature and humidity the nasal index on the living or on crania can be calculated and compared with actual observations.

Attention has also been drawn to the correlation between nasal indices on the living and on crania.

Finally, we have suggested the possible application of conclusions arrived at on modern peoples to the study of the prehistoric inhabitants of Europe, and to the problem of migrations.

APPENDIX I.

TABULATION OF DATA.

L.—LIVING.

A.—Climate Hot and Moist.

Group or Locality.	Number of individuals in group.	Observed nasal index.	Calculated nasal index.	Mean Annual	
				Temperature in deg. F.	Relative Humidity. Per cent.
Babinga, basin of Lohanju	51	104.8	85.1	77.4	90
Negroes, South Gaboon	87	104.6	84.1	76.4	88
Cameroons (mixed races)	125	98.6	85.1	77.4	90
Dhulia, Khandesh Bhil caste	100	94.8	78.7	78.3	63
Fan, Fiottes, etc. (South Cameroons)	58	94.7	85.1	77.4	90
Cross River, Cameroons	118	94.0	85.3	77.9	90
Ses Dyak, Borneo	42	93.9	83.8	78.4	83
Maba, Cochin	27	93.6	84.6	81.2	81
Battaks and Kubus, Sumatra	31	91.1	84.8	78.8	86
Shan-ta leke tribe, Kyigyo	100	89.8	85.0	79.3	86
Wanyamwezi	44	89.7	83.3	80.1	78
Embu	100	88.5	81.9	73.4	85
Fadsung, South China	108	88.3	83.1	80.7	76
Banjarese, South-East Borneo	33	88.0	84.5	80.4	83
Massi and Embu	108	87.9	85.8	80.6	87
Kikuyu... ..	274	87.1	83.2	74.6	88
Sundanese	26	86.9	83.8	78.4	83
Bantu, British East Africa	402	86.9	83.2	74.6	88
Akamba	128	86.5	83.2	74.6	88
Lake Chad	121	86.5	83.1	83.2	71
Hanzada	236	86.2	84.4	79.8	83



FIG. 1.

Leptorrhine. Nasal Index 39·4.
Algonquin Indian.

Platyrrhine. Nasal Index 55·4.
North-west Australian.



FIG. 2.

Leptorrhine Skulls.

Eskimo, 42·7. Am. Indian, 39·4. Papuan, 41·9. Indian, Hyderabad, 41·8.

Platyrrhine Skulls.

Australian, 58·1. N.W. Australian, 55·4. African Negro, 60·0. Zulu, 57·0.

APPENDIX L—TABULATION OF DATA—*continued.*

I.—*LIVING—continued.*

A.—*Climate Hot and Moist—continued.*

Group or Locality.	Number of individuals in group.	Observed nasal index.	Calculated nasal index.	Mean Annual	
				Temperature in deg. F.	Relative Humidity. Per cent.
Javanese	17	85.7	83.8	78.4	83
Bauri	40	85.1	81.2	80.3	69
Rangamati (Mongoloid type) ...	266	84.5	82.8	74.3	87
Malay Peninsula (mixed)	248	84.2	83.8	78.4	83
Cochin-Chinese... ..	30	83.3	82.0	80.0	73
Sihagiar (Assam)	44	83.0	81.5	72.6	85
Perak	31	82.7	83.8	78.4	83
Singhalese	56	82.6	84.4	80.2	82
Malays, East Coast	135	82.6	83.0	80.0	77
Malays, South Perak	36	82.3	83.8	78.4	83
Kewat caste	38	82.3	81.2	80.3	69
Mohaves	38	82.2	80.3	72.7	80
Pan caste	40	82.1	81.2	80.3	69
United Provinces, Aryo-Dravidian type	Large	80.8	79.6	77.2	69
Sumbanese	42	80.7	83.6	78.4	83
Siamese... ..	93	80.6	82.4	75.6	82
Cuttack... ..	325	80.4	81.0	80.3	69
Aryo-Dravidians, Behar	Large	80.1	83.4	74.8	88
Tribes of South Chaco (Argentine) ...	159	79.9	78.7	72.1	75
Tinnevely, Dravidian type	130	79.4	81.9	84.3	65
Kandra caste	41	79.3	81.0	80.3	69
Chasa caste	59	79.3	81.0	80.3	69
Bengal proper	Large	78.7	83.8	78.6	78
Khandait	40	78.7	81.0	80.3	69
Malabar, Dravidian type	405	77.0	84.0	80.2	81
Dravidians, Trevancore	145	76.9	83.8	78.8	82
Gaura caste	41	76.8	81.0	80.3	69
Kokanasth Brahman	100	76.6	79.3	77.6	66
Bombay and Poona	200	76.2	79.3	77.6	66
Masai	91	76.2	79.4	72.8	76
Dravidian type, Madras, etc. ...	385	75.9	83.7	81.8	76
Prabhu, Satara, etc.	100	75.8	79.3	77.6	66
Bombay (Seytho-Dravidian)... ..	200	75.6	83.3	80.3	78
Bombay and Thana	200	75.4	82.8	79.3	78
Shenvi Brahman, Bombay	100	74.7	82.8	79.3	78
Bishareen	53	74.4	75.5	75.8	55
Tibetans	116	74.4	71.5	54.6	79
Mandalay	160	74.1	83.0	80.8	75
Kohlapur, Bombay	145	72.7	78.4	72.8	68
Punjab, Indo-Aryan type	312	71.4	77.6	76.4	63
Brahui, Indo-China	198	70.9	77.1	71.6	73
North-West Punjab, Turko-Iranian	140	68.8	77.6	76.4	63

B.—*Climate Cold and Moist.*

Chilcotin	37	79.5	71.1	50.0	87
Lepcha, Sikkim	36	78.0	72.3	52.7	86
Khambu, Nepal	32	76.6	72.3	52.7	86
Mangar, Nepal... ..	35	76.6	72.3	52.7	86

APPENDIX I.—TABULATION OF DATA—*continued.*I.—LIVING—*continued.*B.—*Climate Cold and Moist—continued.*

Group or Locality.	Number of individuals in group.	Observed nasal index.	Calculated nasal index.	Mean Annual	
				Temperature in deg. F.	Relative Humidity, Per cent.
Nepal, Sikkim, and Darjeeling ...	259	76.0	72.3	52.7	86
Murmi, Nepal ...	65	75.2	72.3	52.7	86
Limbu, Nepal ...	50	74.1	72.3	52.7	86
British Columbia ...	179	73.8	71.1	50.0	87
Kalmucks, Astrakan ...	93	73.4	70.3	48.2	88
Bilqula ...	49	72.8	71.1	50.0	87
Chiloe Archipelago ...	50	72.0	71.7	53.6	82
Indians, British Columbia ...	126	70.8	69.6	47.1	87
Mont de Marson ...	Large	70.3	69.2	54.1	72
Persians ...	—	70.0	70.2	56.4	72
Landes, France ...	Large	69.9	70.7	55.0	80
Sarlat, Dordogne ...	Large	69.8	70.6	56.6	72
Dobrudja, Turkestan ...	60	69.4	67.9	55.8	63
Smolensk ...	100	69.4	63.7	40.6	75
Paris ...	98	69.1	69.0	59.0	79
La Gironde ...	Large	68.6	71.2	54.2	80
Italian soldiers, all Italy ...	Large	68.5	70.1	57.0	70
Soule, France ...	Large	68.5	70.7	52.7	80
Brussels... ..	50	68.3	69.5	49.8	81
Basses Pyrénées ...	Large	67.9	68.4	54.1	69
Georgians, Tiflis ...	43	67.8	68.4	55.0	67
Persians and Georgians, Tiflis ...	67	67.5	68.4	55.0	67
Bretons... ..	70	67.5	70.0	52.0	79
Lepcha, Sikkim ...	57	67.2	69.5	52.7	75
Venetians ...	67	66.7	71.0	54.1	79
Auvergne ...	200	66.7	70.7	52.7	80
South of France ...	50	65.7	67.9	56.0	63
Tchetchenes, Caucasus ...	Over 100	64.5	66.7	52.2	66
Poti and Daghestan ...	151	63.8	65.6	42.4	81
North Caucasus, mixed races ...	365	63.7	65.5	47.5	70
Mountain Jews, Baku... ..	60	63.2	68.8	51.1 ¹	76
Azerbezan Tatars ...	169	63.2	68.7	51.1	76
Tirolese... ..	80	63.0	64.8	46.6	68
Armenians ...	105	59.5 (?)	70.8	60.0	67

¹ Annual range 40.7.C.—*Climate Hot and Dry.*

Boulalas, Lake Chad ...	85	87.2	78.2	83.2	52
Budimas, Lake Chad ...	36	85.0	78.2	83.2	52
Malar, Poona ...	100	81.9	75.5	75.9	55
Poona ...	Large	80.9	75.5	75.9	55
Maratha ...	100	80.1	75.5	75.9	55
Poona ...	212	79.8	75.5	75.9	55
Bidar ...	40	79.4	77.7	80.8	54
Poona, mixed races ...	459	79.2	75.5	75.9	55
Kumbi ...	100	79.2	75.5	75.9	55
Bishareen and Abahdeh, Kesseir ...	103	77.9	75.5	75.8	55
Madiga ...	40	77.5	75.5	80.8	54
Togata ...	30	77.5	75.5	80.8	54

APPENDIX I.—TABULATION OF DATA—*continued.*

I.—LIVING—*continued.*

C.—Climate Hot and Dry—*continued.*

Group or Locality.	Number of individuals in group.	Observed nasal index.	Calculated nasal index.	Mean Annual	
				Temperature in deg. F.	Relative Humidity. Per cent.
Mala	30	76.2	77.7	80.8	54
Vania, Ahmedabad	127	75.7	79.7	82.1	60
Bellary, mixed races	525	75.2	77.7	80.8	54
Mesopotamian Jews, Baghdad	37	75.0	74.9	72.6	50
Kuruba	50	74.9	77.7	80.8	54
Sukun Sale	30	74.8	77.7	80.8	54
Ahmedabad	227	74.6	80.2	82.7	60
Linga Banjigaru	30	74.6	77.7	80.8	54
Jangam	30	74.5	77.7	80.8	54
Rajputana, Indo-Aryan	420	74.4	77.7	79.3	55
Bangari	30	73.6	77.7	80.8	54
Padma Sale	30	73.2	77.7	80.8	54
Nagar Brahman, Ahmedabad	100	73.1	79.7	82.1	60
Baloch	271	72.5	74.5	79.3	45
Mzab, Sahara	Large	71.0	73.8	84.2	33
Brahui, Sarawan country	198	70.0	74.7	79.3	46
Tunis	Large	70.2	71.7	65.1	61
Sicilians	382	70.0	71.2	63.7	61
Egyptian Jews	50	64.0 (?)	68.3	70.5	37

D.—Climate Cold and Dry.

New Mexico and Arizona	58	78.3	65.5	59.5	47
Khotan and Keria, Turkestan	38	75.6	65.4	54.6 ¹	59
Tarantsben, Kuldja	307	66.0	65.0	48.9	61
Aderberahan Tartars	34	63.7	65.2	52.2	60
Jat from Sibi	100	63.1	66.1	58.7	50
Sibi, Mastung, Quetta, etc.	282	62.4	66.1	58.7	50
Lori caste	58	62.2	66.1	58.7	50
Dehwar	76	62.1	66.1	58.7	50
Mir Jat	48	61.7	66.1	58.7	50
Yesidi	40	61.1	65.2	52.2	60
Mengal (Brahui)	77	59.5	62.9	54.8	45
Wanechi, Pathan, etc.	59	59.2	62.9	54.8	45
Makhiani (Pathan)	100	59.2	62.9	54.8	45
Bandija	35	58.9	62.9	54.8	45
Chutta	33	58.5	62.9	54.8	45

¹ Annual range 57.9.

II.—CRANIA.

A.—Climate Hot and Moist.

Nilotic Negroes	29	59.3	53.6	80.7	74
Angoni, South of Lake Nyassa	25	58.0	52.9	75.8	76
Zulu, South of Zambesi	20	58.0	53.9	83.2	73
Fan	—	57.8	53.9	77.4	85
Gaboon, Fernand Vaz	18	56.5	53.9	76.4	87
Gaboon,	50	55.3	53.9	76.4	87

APPENDIX I.—TABULATION OF DATA—*continued.*II.—CRANIA—*continued.*A.—*Climate Hot and Moist—continued.*

Group or Locality.	Number of individuals in group.	Observed nasal index.	Calculated nasal index.	Mean Annual	
				Temperature in deg. F.	Relative Humidity. Per cent.
Batelela, French Guinea	49	55.2	53.3	79.0	75
Cambodia	15	55.0	53.7 (?)	75.6 (?)	84
Trás os Montes, Portugal	Large	53.7	50.2	59.0	80
Burmese	28	53.4	53.6	78.0	80
Virginia... ..	12	52.8	51.3	66.0	78
Veddah... ..	—	52.0	54.2	80.2	83
Bengal	12	52.0	53.6 (?)	78.6	78 (?)
North Borneo	16	51.8	53.6	78.3	80
Ogowe River	—	51.0	53.9	76.4	87
Andamanese	14	50.9	54.4	81.1	83
Singhalese (Ceylon)	—	50.6	54.1	80.2	82
Formosa	14	49.5	51.2 (?)	70.4	81 (?)
Chinese	21	49.5	50.3	59.0	80
Koreans	12	48.6	50.3	60.0	79
Malays	—	48.0	54.0	80.0	80
Mogador, Morocco	6	47.6	51.2	64.0	81
Cretans	53	47.1	51.2	63.8	70
Minho, Portugal	—	44.8	48.0	58.8	76
Portuguese, general	—	44.7	49.7	59.6	72
Guanches	17	44.2	50.9	65.2	76

B.—*Climate Hot and Dry.*

Moschi, Kilimandjaro... ..	29	63.5	52.8	78.5	70
Bushmen	8	60.2 (?)	49.6	65.0	61
Zulu	—	58.5	51.6	71.0	71
Hottentot	10	57.3	49.6	65.0	61
Kafir, Pondoland	36	56.3	50.9	71.0	64
Orissa	29	50.8	52.3	77.8	66
Modern Egyptians	137	50.6	50.5	78.6	44
Ancient Egyptians	Large	50.0	50.5	78.6	44
Tunis (modern)	17	50.0	49.6	64.6	61
Berbers, Biskra	46	48.9	50.3	68.6	61
Sicilians... ..	—	48.3	49.4	63.7	61
Modern Sardinians	57	48.3	48.8	60.2	63
Oasis of Jupiter Ammon	13	48.0	49.6	78.2	36
Punjab	—	48.0	51.7	76.4	63
Mateur (Algeria)	7	48.1	50.0	64.8	66
Carthage (Punic Period)	112	47.7	49.6	64.8	61
Aden	19	46.8	51.0	81.2	45
Ancient Pompeians	—	46.6	49.4	59.8	69
Etruscans	7	45.3	49.0	59.8	65

C.—*Climate Cold and Moist.*

Rhode Island	6	52.5	49.2	51.6	82
New York State	15	51.8	48.3	51.6	72
Iroquois	26	51.7	48.6	51.6	76
Yezo and Saghalien	29	51.2	47.2	44.2	76
Munsee (N.J.)	7	51.1	49.2	51.6	82
New Jersey	7	51.0	49.2	51.6	82

APPENDIX I.—TABULATION OF DATA—*continued.*

II.—CRANIA—*continued.*

C.—Climate Cold and Moist—*continued.*

Group or Locality.	Number of individuals in group.	Observed nasal index.	Calculated nasal index.	Mean Annual	
				Temperature in deg. F.	Relative Humidity. Per cent.
Grisons	—	51.0	48.4	48.2	82
Ainu	—	50.7	49.5	56.7	76
Sorrel Bayou, Louisiana	8	50.4	49.0	55.6	72
Chateau Chinon	29	50.2	48.4	50.8	76
Japanese	—	50.0	49.7	58.2	76
Aleut, Kamskatka	10	50.0	46.1	39.7	72
Massachusetts	10	49.7	47.9	48.6	74
South-Eastern Canada	8	49.1	46.8	41.8	76
Novilara (Spain)	—	49.0	48.8 (?)	56.2	70 (?)
Dauphinois	—	49.0	49.1	56.0	74
Ancient Bavarians	Large	48.9	47.1	45.7	71
Mecklenburg	23	48.8	47.9	47.4	78
Brussels... ..	55	48.8	48.7	49.8	81
Laas	Large	48.7	47.3	46.6	71
Astrakan Kalmucks	37	48.7	47.5	48.2	71
Disentia... ..	Large	48.3	48.0	47.6	77
Namur	33	48.3	48.5	49.9	79
Rumanians	—	48.1	48.1	50.6	72
Tierra del Fuego	—	48.1	47.0	43.4	76
Galicia, Spain	—	47.8	49.3 (?)	56.2	76 (?)
London, England	292	47.5	48.4	50.6	76
Tirolese... ..	Large	47.5	47.3	46.6	71
Czechs	102	47.2	47.5	48.0	72
North France	125	47.0	48.7	50.0	81
Paris	100	47.0	48.5	49.9	79
South-West Germany... ..	150	47.0	48.5	49.8	79
Vorarlberg (Austria)	40	46.7	47.3	46.6	71
Peking	37	46.4	48.3	53.0	71
Savoyards, Chambéry... ..	25	46.2	49.0	56.0	72
Alaska (Kenai and Kolgurchen)	16	46.1	43.6 (?)	22.4	80
Lower Brittany	50	46.0	49.2	55.2	77
Slovenes	60	46.0	47.9	50.0	72
Leon, Spain	—	46.0	49.0	56.2	72
Baden	—	45.8	47.9	47.2	78
S. Jean de Luz, Spain	50	45.8	48.8	55.0	7
North Sea Coast	40	45.6	48.6	48.4	84
Lemberg	18	45.5	48.0	48.8	75
Alsations	—	45.1	47.9	50.4	7
Auvergnac, South Nectaire	50	44.4	47.7	49.2	72
Breton	50	44.0	48.0	52.0	79
Baskirs	54	43.8	45.7	38.8	6
Eskimo	35	41.4	43.6	22.0	80
Frisians... ..	—	40.3	48.3	46.9	82

D.—Climate Cold and Dry.

Spain, Malagar... ..	—	50.0	48.3	56.2	65
Hissarlik (Troy)	9	48.9	48.5	57.8	63
Kirghiz, Turkestan	10	46.3	47.9	55.8	60
Spain, Guipuzcoa and Caceres	Large	42.0	47.9	56.2	60

APPENDIX II.

COEFFICIENTS OF CORRELATION AND REGRESSION FORMULÆ.

A.—COEFFICIENTS OF CORRELATION (INTER-RACIAL CORRELATION).

	No. of Groups.
1. Nasal index (living) and temperature $\pm 0.6291 \pm 0.0330$	153
2. Nasal index (living) and relative humidity $\pm 0.4188 \pm 0.0449$	153
3. Nasal index (living) and temperature-and-relative-humidity $\pm 0.7238 \pm 0.0258$	153
4. Nasal index (crania) and temperature $\pm 0.5324 \pm 0.0495$	98
5. Nasal index (crania) and relative humidity $\pm 0.1123 \pm 0.0673$	98
6. Nasal index (crania) and temperature-and-relative-humidity $\pm 0.5533 \pm 0.0472$	98
7. Nasal index (living) and nasal index (crania) $\pm 0.8081 \pm 0.0331$	50

B.—REGRESSION FORMULÆ.

1. Nasal index (living) = (temperature $\times 0.461$) + 43.95.
2. Nasal index (living) = (relative humidity $\times 0.228$) + 59.98.
3. Nasal index (living) = (temperature $\times 0.483$) + (relative humidity $\times 0.253$) + 24.91.
4. Nasal index (crania) = (temperature $\times 0.167$) + 39.50.
5. Nasal index (crania) = (temperature $\times 0.178$) + (relative humidity $\times 0.090$) + 32.52.
6. Nasal index (living) = (nasal index (crania) $\times 2.327$) - 38.08.

(Temperature is calculated in degrees Fahrenheit in all cases.)

C.—CALCULATED VALUES OF NASAL INDICES.

These formulæ do not apply beyond the limits given in the following tables. Interpolated values can be calculated from B or C as is most convenient.

(a) *Nasal Index and Temperature.*

Observed temperature	50	60	70	80	90
Calculated nasal index (living)	67.00	71.61	76.22	80.83	85.44
Calculated nasal index (crania)	47.87	49.54	51.21	52.88	54.55

(b) *Nasal Indices Living and Crania.*

Observed nasal index (crania)...	45	50	55
Calculated nasal index (living)	62.62	78.25	89.88

*Research Committee of the Royal Anthropological Institute for the Archaeological
Exploration of Derbyshire Caves. Report No. 1.*

A SEPULCHRAL CAVE AT TRAY CLIFF, CASTLETON, DERBYSHIRE.

[WITH A REPORT ON THE SKELETAL REMAINS BY DR. ALEX. LOW, OF ABERDEEN.]

By LESLIE ARMSTRONG, M.C., F.S.I., F.S.A. (Scot.)

IN September, 1921, a chance discovery by workmen mining for fluor-spar below Tray Cliff (Ordnance, "Treak" Cliff), about one mile due west of Castleton, Derbyshire, revealed a quantity of human bones representing at least three individuals, together with fragmentary bones of animals. Fortunately the writer, on behalf of the Committee for the Archaeological Exploration of Derbyshire Caves, was enabled, by courtesy of the mine manager and foreman, to secure for examination one complete skull with mandible and a few of the most important bones before they were dispersed. These, Messrs. West & Co., the mine owners, kindly placed at the disposal of the Committee. Unfortunately the remainder of the bones discovered, including two skulls, were taken away, and all efforts have failed to procure them.

The situation of the cave is shown upon Ordnance Map, Derbyshire, Sheet IX, N.E., and its position is more precisely indicated upon the accompanying sketch key-plan (Fig. 1). The cave is at an altitude of 1050 feet O.D., 400 feet south-west of the point at which the footpath to the Blue John Mine leaves the Castleton-Chapel-en-le-Frith main road, between the first and second milestones out of Castleton. In the vicinity are numerous outcrops of limestone suggesting ancient cliff faces buried or partially obscured by landslides. The mining operations in progress on the site consisted principally of open workings following superficial deposits of fluor spar. The bones occurred beneath 15 feet of material, of which the first 4 feet consisted of loose rubble, humus and clay, suggesting the *débris* of a landslide, covering and enclosing massive blocks of limestone and spar in irregular fragments which continued down to the 15-foot level. Underneath the blocks was a deposit of fairly uniform character, stratified, and consisting of small water-borne limestone *débris* and clay, in which the bones were embedded at a depth of 12 to 15 inches.

From the fluted and water-worn appearance of the lower surfaces of such limestone blocks as remained undisturbed when the site was first visited, confirmed by an examination of large blocks which had been removed, it was suspected that a cave formerly existed at this point, the roof of which had collapsed sometime after the bones were deposited therein. Subsequently a landslide, perhaps resulting from the collapse of the cave, had obliterated all surface evidences of its existence.

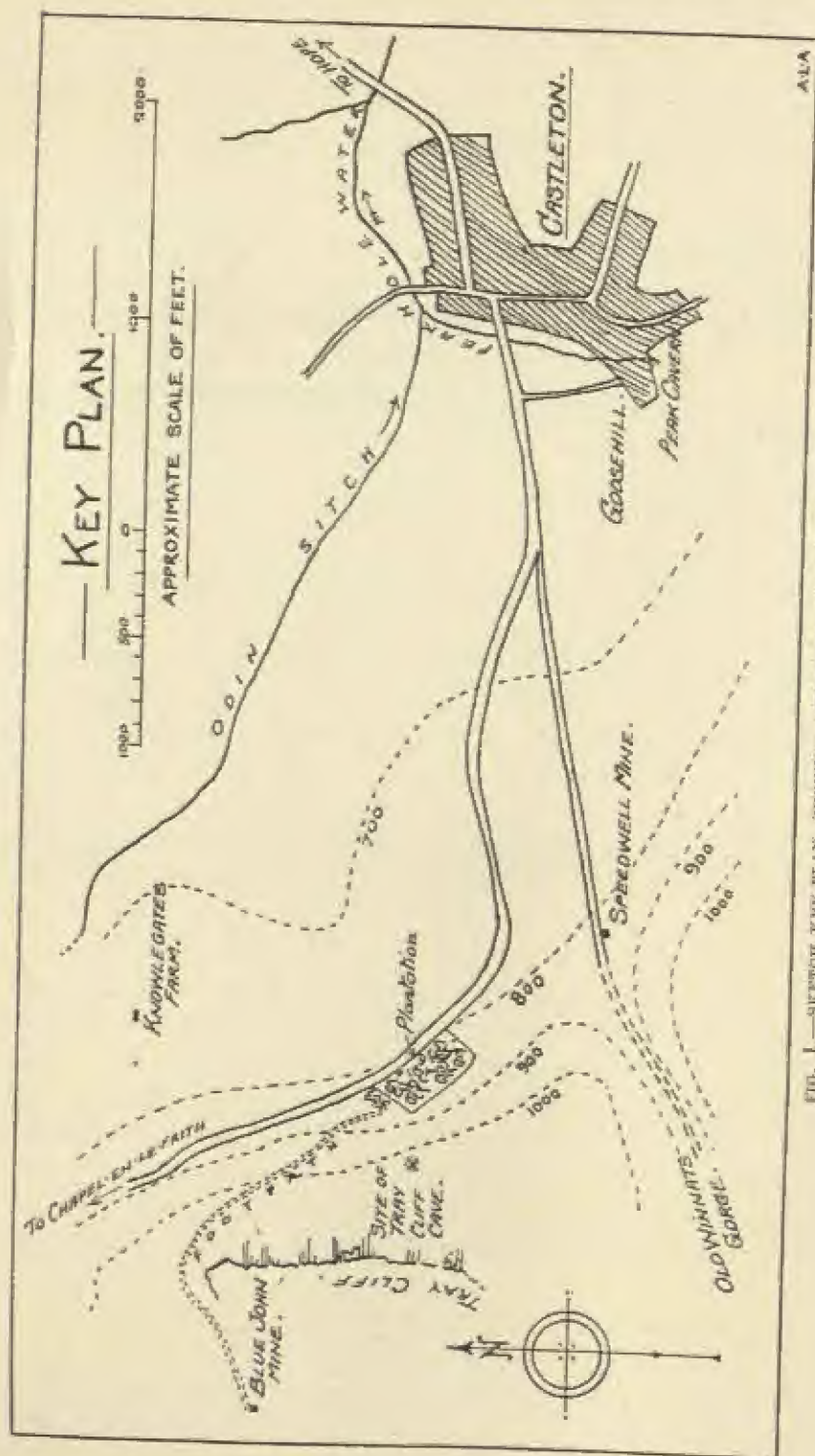


FIG. 1.—SKETCH KEY-PLAN, SHOWING SITUATION OF TRAY CLIFF CAVE.

With the co-operation of Dr. R. V. Favell of Sheffield, excavations were ultimately undertaken which established this fact and defined the plan of the cave (Fig. 2). Its height at the time of collapse had been not less than 4 feet 6 inches at the walls. Water had entered it through a swallow-hole at the south-west corner, connected with the surface above, and the periodic intrushes of flood water had deposited the clay and rubble forming the floor of the cave before escaping down the two narrow swallets upon the north side.

This deposit was proved, at two points, to a depth of 6 feet below the cave floor level without finding any bottom.

The channel by which the water entered would no doubt provide a practicable entrance to the cave, but it is possible that a more desirable one existed on the south side, where indicated upon the plan (Fig. 2).

This fact, however, could not be definitely established, owing in part to quarrying operations and in part to the presence of a steep talus of material from mine workings above, and the indications of an entrance there may be nothing more than an ordinary deep alcove in the cave. Owing to the slope of the hill the natural surface cannot have been more than a few feet distant at this point, and, at the time of collapse, would be at about the same horizontal level as that of the cave floor.

For some time prior to the collapse of the roof, water seems to have entered the old swallow-hole only at times of excessive flood. The normal flow was probably diverted into a new channel northwards, where, through a crevice, can be seen a wide funnel down which water still flows, passes this old cave, and plunges to lower depths. The cave would thus be comparatively dry during long intervals. If entered from the south it would be fairly well lighted, lofty, and suitable for human occupation, though no trace of any regular occupation was obtained.

THE HUMAN SKELETAL REMAINS.

The human remains were found close to the west wall of the north alcove, lying within a space of 3 feet by 3 feet, compacted together with clay. Unfortunately they were not seen *in situ* except by the workmen, who stated that the skulls lay nearest the wall, and the relation of the other bones thereto, as described by the finders, suggests that the remains had been buried, not carried there by water.

This view is supported by the fact that the bones were confined to a limited area, that they were unrolled or broken, and that the mandibles were in articulation with the skulls. Though no complete skeleton was found, and a considerable number of bones are missing, the circumstances favour the burial of the actual bodies and not merely the bones collected after decomposition.

It is probable that the individuals were buried in the characteristic crouching position, lying east and west, in shallow graves which have been subsequently disturbed by water. Though three, probably four, individuals are represented, only scanty remains of the upper portions of the skeletons were found, viz., skulls,

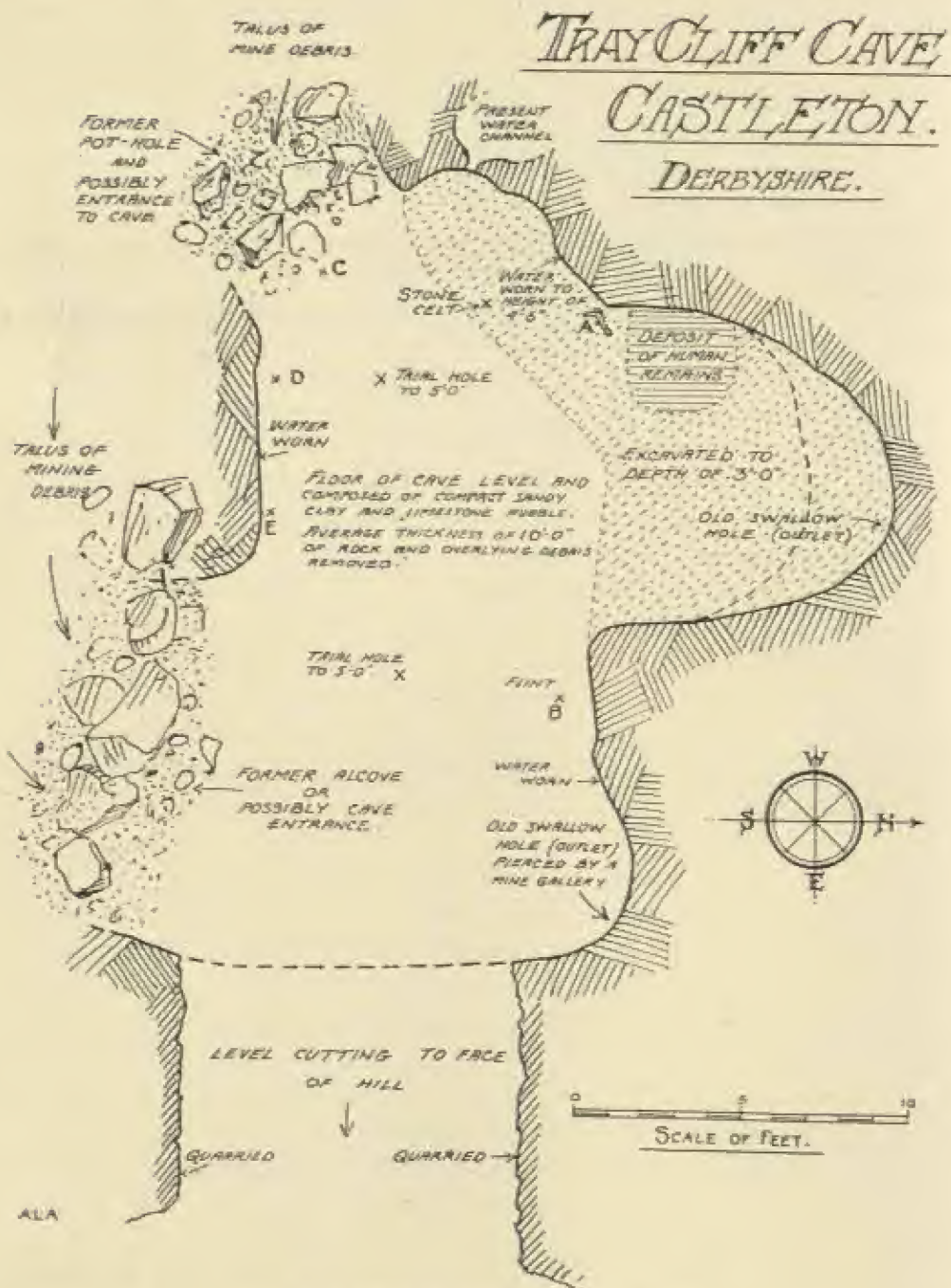


FIG. 2.—PLAN OF TRAY CLIFF CAVE.

a few vertebra, scapula, bones of the arm, one finger phalange and a few ribs. No pelvis was recovered, nor any bones of the lower limbs, except one fragmentary femur badly smashed in removal.

The periodic inrushes of water entering the cave in considerable volume and force during sudden storms, or after persistent rain, had to find an outlet down the two small swallets on the north side. The largest of these is situated within 7 feet of the burial place, and its area is very restricted; therefore the whirlpool resulting from the escaping water would exert considerable excavating power in its earlier stages, and particularly at its centre. Assuming that the skeletons lay in a crouched-up

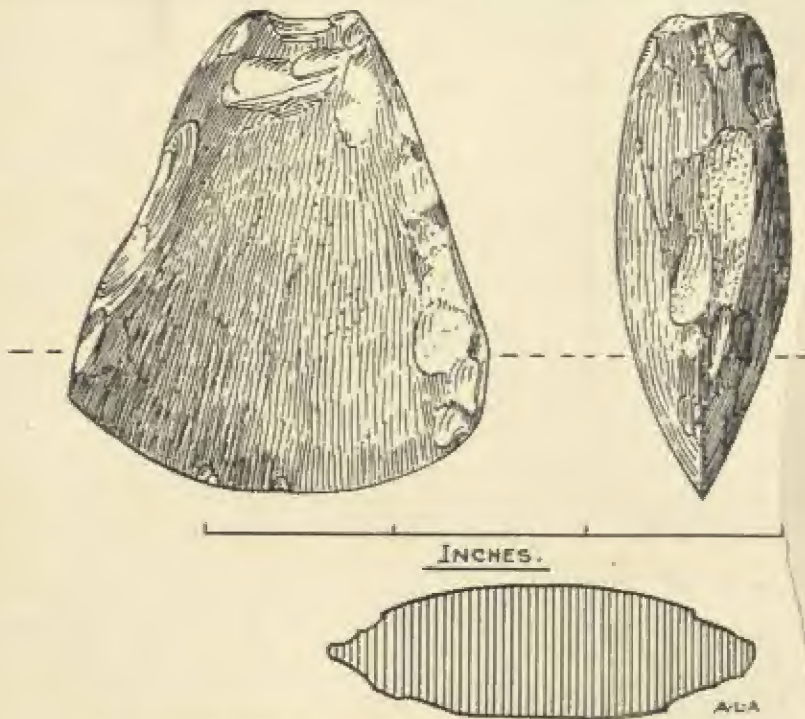


FIG. 3.—POLISHED AND RE-CHIPPED CELT, TRAY CLIFF CAVE.

position, the force of the whirlpool would be greatest over the place occupied by the pelvis and lower limbs in the shallow graves. This provides a sufficient reason alike for the disturbance of the graves and the disappearance of the major portion of the remains. No doubt the missing bones have been carried into the swallet; the subsiding water would enclose the remaining ones in the deposit of finely-washed clay left by it, and successive floods gradually bury them completely.

The site occupied by the bones is shown in cross-hatching upon the plan (Fig. 2). This and the whole of the shaded area was carefully excavated, but, unfortunately, not before it had been completely turned over by the workmen to a depth of 3 feet. No further bones other than animal bones were recovered. Dr. Alex. Low,

of Aberdeen University, has kindly made an examination of the available skeletal remains, and his Report, together with tracings and measurements of the skull, is appended.

ASSOCIATED RELICS.

Four feet south of the human remains and upon the same level therewith, a small polished and re-chipped celt of greenish volcanic rock was found by one of the workmen (Fig. 3). This is $2\frac{1}{2}$ inches long, $2\frac{1}{8}$ inches across the cutting edge and $\frac{7}{8}$ -inch extreme thickness. It is probably part of a broken polished axe originally of pointed oval section, which has been re-chipped and partially re-polished at each side, to produce a tapering form with flattened butt, as though for insertion in a socket. The blade is segmental and polished to a fine edge. It is apparently "Neolithic," but not sufficiently characteristic to be datable. In form it somewhat resembles the greenstone celt found by Sir William Boyd Dawkins in Rhodigre Cave.¹

Amongst the numerous bones collected by the workmen was a much worn red deer antler pick, said to have been found at "A" (Fig. 2). It consisted of the brow tine and coronet, with a fragment of the beam, including the bez tine.

Part of a flint pebble was picked up near the north wall, at "B" (Fig. 2). It is unworked, but interesting, because all flint in this locality is of foreign origin. Careful search failed to reveal any traces of charcoal or of pottery.

MAMMALIAN REMAINS.

Fragmentary bones and teeth of animals were obtained at various points over the area of the cave floor, notably at "C," "D" and "E" (Fig. 2). Those recovered by the Committee have been determined by J. Wilfrid Jackson, M.Sc., F.G.S., Assistant Keeper of Manchester Museum, as follows:—

Dog (Canis familiaris).—Hinder part of cranium and two canines showing grooves due to wear.

Pig (Sus scrofa).—Fragment of lower jaw of very young animal.

Sheep (Ovis aries).—Molar.

Roedeer (Capreolus caprea).—Molar.

Rabbit (Oryctolagus cuniculus).—Upper part of tibia and a metacarpal.

Water Vole (Arvicola amphibia).—Canines, etc.

To these must be added the following species noted amongst the bones at Castleton, when the skull, etc., was obtained for examination, but which have since been lost.

Fox (Canis vulpes).—Fragment of lower jaw.

Red deer (Cervus elaphus).—Teeth and portion of antler.

Ox (Bos longifrons ?).—Teeth.

¹ *Cave Hunting*, p. 157.

MOLLUSCA.

Determined by J. Wilfrid Jackson, M.Sc., F.G.S.

Helix nemoralis.—3 examples.

Helix hortensis.—4 examples.

Pryamidula rotundata.—2 examples.

In many respects the Tray Cliff cave recalls the Perthi-Chwareu group of caves explored by Sir William Boyd Dawkins in 1870-72,¹ the fauna of which is similar, and it is much to be regretted that the whole of the skeletal remains recovered have not been available for expert examination. This is emphasized, because the remaining skulls are believed to be those of elderly individuals, whereas that entrusted to the Committee is immature.

REPORT ON THE HUMAN SKELETAL REMAINS.

By Dr. ALEX. LOWE, Aberdeen University.

The skeletal remains consist of a skull with mandible; several pieces of the vault and face of another skull; fragmentary shafts of an ulna, femur and tibia all belonging to the right side.

SKULL WITH MANDIBLE.

The skull with mandible is that of a boy seemingly about 15 to 17 years of age. The synchondrosis between the occipital bone and sphenoid is open; while the first and second molar teeth are erupted, the third molars are not erupted but are embedded in the jaws; the mastoid processes are developed but small (Fig. 4).

The skull is in a fairly good state of preservation, and sufficiently intact to permit of all the more important measurements being recorded (*see table of Measurements*). The cranium has an approximate capacity of 1350 c.c. of mustard seed.

Norma verticalis.—In *norma verticalis* the cranium is broadly ovoid, the transverse diameter being so great as to give it a markedly brachycephalic appearance. The cephalic index is 83.3. The zygomatic arches enter slightly into this view, as also parts of the nasal bones and the alveolar margin of the superior maxilla.

Norma lateralis.—The nasion is somewhat depressed. The vault is high, rising up in the frontal region with a steep curve to the bregma; behind this there is some

¹ *Cave Hunting*, p. 152.

flattening, and then the postero-parietal passes with a sharp curve to the lambda; as a whole the occipital pole does not project.

Norma occipitalis.—The outline of this view approaches the pentagonal. The greatest width is high up on the parietal bones, the sides of the skull below this being flat.



FIG. 4.—TRAY CLIFF SKULL, PROJECTION CONTOURS MADE WITH DIOPTOGRAPH, $\frac{1}{2}$.

Norma frontalis.—The face is long and rectangular, the orbits have their outer angles somewhat depressed and are very square looking, the height being only 3 m.m. short of the width. The nasal aperture is narrow, and there is distinct subnasal prognathism.

The mandible is well formed, and the body is thickened on its lingual aspect by a well-marked shelf supporting the molar teeth.'

Other Skeletal Remains.

These are so fragmentary as to admit of little description. There are six pieces of another human skull—one piece of right parietal, two pieces of left parietal, one piece of left occipital, one piece of alveolar margin of left upper jaw with canine and first bicuspid tooth, and a piece of body of left-half of mandible showing thickened shelf on lingual aspect for sockets of molar teeth.

In addition, there were recovered the greater part of the shaft of a right ulna, a portion of the shaft of a right femur showing distinct platymeria, and the upper part of the shaft of a platymeric right tibia.

One is hardly justified in drawing any very definite conclusions from a single skull, and that immature, but the high, short, broad type of skull presents features characteristic of the Bronze Age race.

Measurements of Tray Cliff Skull.

Glabello-occipital length	168	Bizygomatic breadth	118 <i>ap.</i>
Ophryo-occipital length	168	Nasio-mental length	105
Nasio-inional length	159	Complete facial index	89
Basi-bregmatic height	131	Nasio-alveolar length	62
Length-height index	78	Upper facial index	52·5
Minimum frontal breadth	96	Nasal height	45
Maximum frontal breadth	119	Nasal width	21
Maximum breadth	140	Nasal index	46·7
Cephalic index	83·3	Orbital width	34
Breadth-height index	93·5	Orbital height	31
Horizontal circumference	488	Orbital index	94·1
Frontal longitudinal arc	129	Measurements of mandible—	
Parietal longitudinal arc	123	Bicondylar width	111
Occipital longitudinal arc	111	Bigonial width	95
Sagittal cranial arc	363	Length of ascending ramus	42
Transverse cranial arc	304 <i>ap.</i>	Minimum width of ascending	
Foramen magnum length	33	ramus	29
Foramen magnum breadth	27	Maximum width of ascending	
Basi-nasal length	87	ramus	36
Basi-alveolar length	89	Symphysial height	29
Gnathic index	102·3	Maximum thickness of body	16

A CONTRIBUTION TO THE CRANIOLOGY OF THE YELLOW-SKINNED RACES OF SOUTH AFRICA.

[WITH PLATES VII AND VIII.]

By R. BROOM, M.D., F.R.S.

MUCH has been written about the Bushmen and other pre-Bantu types of South Africa, and a considerable number of papers have been published dealing with their anatomical structure; but it must be admitted by anyone consulting the literature that the whole subject of the yellow-skinned races is at present in a state of considerable confusion.

The earlier travellers and writers recognized two main types of the non-Bantu races—the Bushman and the Hottentot—which differed considerably in appearance, and spoke entirely different languages. The best account we have of these races is probably that to be found in *The Native Races of South Africa*, by George W. Stow; and Stow's account is of further value, in that it has the general approval of the leading historian of South Africa, Geo. M. Theal.

Stow believed the Bushmen to be the aborigines of South Africa, and to have inhabited this region from very remote times. "At a comparatively recent period" Hottentot tribes came down from the north and encroached on the Bushmen's territory. The migration of these Hottentots is carefully traced from Central Africa to the West Coast, then down the West Coast to the Cape Peninsula and along the South Coast and the Orange River valley. Various Hottentot tribes are recognized, of which the principal are the Cochoqua, the 'Gora or 'Kora usually called the Korana, and the Grigriqua. At the time of Van Riebeeck it was estimated that all the Hottentots together did not number more than a few thousand, and Stow says "there is not, in fact, the slightest reliable evidence to be discovered that the Hottentots were ever a very numerous race."

Stow's account seems at first so complete and satisfactory that one might readily conclude that the whole problem was definitely solved. When, however, one examines the question more carefully one is perplexed by serious difficulties and doubts.

A good many years ago Dr. L. Peringuey discovered large quartzite bouchers in the Stellenbosch district of Cape Colony, and similar implements have been found not only over the greater part of South Africa, but practically over the whole continent from the Cape to the Mediterranean, and even beyond it as far as India. I have seen bouchers from India quite indistinguishable in type at least from those that may be picked up at the Cape. Were these made by Bushmen? They are manifestly of great antiquity, and they are quite unlike the implements made and

used by Bushmen of recent times. Further, they are frequently of great size, and must have been used by a powerful race of man.

In the diamond gravel terraces of the Vaal river we get types of implements again different from those of the Bushmen of recent times. Those terraces are of great age—certainly many thousands of years old; and from the very large number of implements they afford it may be supposed that the race must have been very numerous. Was this a Bushman race? Again we have no evidence. As I have never seen a boucher of the Stellenbosch type associated with the other types of implements in the diamond gravel, it seems probable that the Vaal river race of the time of the diamond gravels was different from the type that made the Stellenbosch bouchers.

The study of the implements leads, I think, to the conclusion that there was pretty certainly one pre-Bushman race in South Africa and probably two.

Within quite recent times the discovery of the Boskop skull and of the Broken Hill skull have revealed to us two entirely different pre-Bushman human races, one of which may prove to belong to the race that made the Stellenbosch bouchers. But whether either of these races made the implements with which we are familiar or not, the discoveries prove that all conclusions which assume that the Bushman was the first human type in South Africa must be fallacious.

The whole problem has been further complicated recently by the statements of Peringuey and Shrubbsall that they cannot tell the difference between a Bushman and a Hottentot.

For the last twenty years Peringuey has been industriously collecting the remains of the early native races, and he has now in the South African Museum a large collection of Bushman and Hottentot skulls—possibly the largest which has yet been brought together. He has also had large numbers of casts made of the best living examples he could procure of these races. In 1911 he published a beautiful work on the stone implements of South Africa, and in it gives some consideration to the characters of the various human types. In this paper he comes to the remarkable conclusion that "it is well-nigh impossible to distinguish now from outer appearance a so-called colonial Bushman from a native of Hottentot origin," and adds "personally I have given up the attempt." Peringuey apparently regards those natives who lived by the sea-shore and are usually called "Strandloopers" as a distinct race, and considers them as "ethnically older in South Africa than either the so-called Bush or the Hottentot."

Most of the skulls obtained by Peringuey have been submitted for examination and report to Dr. F. C. Shrubbsall, who in 1907 published an important paper, *Notes on Some Bushman Crania and Bones from the South African Museum, Cape Town*.¹ As a result of the examination of these specimens he comes to the

¹ *Annals of the South African Museum*, vol. v.

following conclusions. He considers that "the earliest remains of the Bushmen peoples of South Africa would appear to be those of the Strandloopers found in the caves along the south-eastern seaboard." He further states: "The Strandloopers appear in all respects to be a purer group than the Bushmen and to be distinct from the Hottentots, though the influence of chance selection cannot be quite excluded, owing perhaps to the small amount of material available. The up-country Bushmen appear intermediate between the Strandloopers and Hottentots. The Hottentots present dimensions exactly intermediate between the preceding and the Bantu."

Peringuey admits, "It is quite possible that the skulls [sent to Shruballs] labelled Hottentot or Bush were not classified with sufficient accuracy." So sixty-two additional skulls were sent to England, and the examination of these led Shruballs in 1911 to conclusions differing considerably from those to which he came in 1907. He now writes: "I am quite unable to distinguish between Hottentots and Bushmen The Bushmen are dolichocephalic. The Strandloopers are mesaticephalic and nearer to the brachycephalic, but under eighty in index. Hottentots are more dolichocephalic." In 1907 he states: "The range of variation [of the cranial capacity] in the Strandloopers is from 1185 c.c. to 1515 c.c.," with an average of 1345 c.c. In 1911 he states¹: "The cranial capacity of the Strandloopers is distinctly greater than that of either Bushmen or Hottentots, and it is interesting to note that the skulls which have the greatest presumptive antiquity are the largest. Some exceed 1600 c.c." "The evidence points to the Strandloopers being the most primitive race of South Africa."

The difficulties in which both Shruballs and Peringuey have become involved are due to their unfortunately regarding the Strandloopers as a single homogeneous race; Shruballs was also under the disadvantage of having had sent to him skulls labelled "Bushman" which were in fact Hottentot skulls.

The Strandloopers are really not a race at all, and the name ought never to have been used. All along the coasts of South Africa are to be found "kitchen-middens" of shells formed by natives who had lived on the shores and fed mainly on shell-fish, and near these middens graves of natives are very often found. But the natives that lived along the west coast are very different from those that lived along the south coast. Shruballs figures two skulls of "Strandloopers" from Blaauwberg strand, north of Capetown. These skulls, judging by the figures, are almost pure Hottentots. The other "Strandlooper" he figures on p. 206² is from a specimen belonging to the Kimberley Museum, and is from Cape Seal on the south coast. This specimen, though not pure Bushman, is probably three-quarters Bushman. The Strandloopers from False Bay and from at least 200 miles to the east are for the most part fairly pure Bushmen.

¹ "A Note on Craniology." *Annals of the South African Museum*, vol. viii, 1911, p. 206.

² *Ibid.*

It is generally assumed that pure Bushmen are nearly extinct, and that the remaining yellow-skinned natives are so much mixed that living specimens can afford us little assistance. But this is very far from being the case. There must, for very many years, have been some admixture of races. Hottentots, no doubt, annexed Bushgirls to their kraals, and the Bushmen no doubt stole Hottentot girls from time to time. But while no race is ever quite pure, we have pretty certainly, even in Cape Colony, many hundreds of Bushmen as pure as any Bushmen were when Europeans first visited South Africa, and possibly many thousands of Hottentots just as pure.

But while living Bushmen are not rare, skulls of dead ones—apart from those of “Strandloopers”—are hard to obtain. The wild up-country Bushman probably rarely buried his dead at all, or at most tied the dead body into a bundle, stuck it down an aardvark hole, and then put a few stones on the top. Of course *supposed* Bushman skulls are quite common, and many have found their way to museums in South Africa and Europe. When a farmer in digging a furrow comes across a human skeleton he at once assumes it must be a Bushman skeleton. The idea is very widespread among Dutch farmers that the Bushman skull is distinguished by having no suture down the middle of the frontal bone; so he examines the skull, and finding no suture is at once convinced that the skeleton belonged to a Bushman. If the skull is nicely preserved he may put it in a box and forward it to one of the museums as a “Bushman skull.” If this same skull is later forwarded to a European scientist as a Bushman skull, one can readily understand the difficulties which arise in attempting to distinguish a Bushman from a Hottentot. In the Douglas district where I reside not one old grave in fifty is a Bushman grave.

Anyone who has looked at all carefully at living Bushmen has never any difficulty in distinguishing them from Hottentots, and I hope to show that the Bushman skull differs so greatly from the Hottentot that there is not the least difficulty in telling the one from the other when the types are at all pure.

From the Report of the South African Museum for 1921 it would appear that Dr. Peringuey's views have undergone some modification. He now speaks of “Strand-Looper Hottentots” and of “Bush natives of great purity of race,” and makes the following interesting statement: “For a clear comprehension of the Bushman race the Hottentot has to be investigated thoroughly, both physically and otherwise, and this investigation may throw light on the theory I hold that the Khoi Khoi (*vulgo* Hottentot) was physically absorbed by the conquered or subdued race we call the Bushman.”

BUSHMEN.

For our study of the Bushmen we are practically limited to the living specimens still inhabiting South-West Africa, the Kalahari, and various other parts of South Africa, and to the remains of earlier Bushmen which we find buried along the south coast and at various parts of the Cape.

Dr. Peringuey has recently had casts made by Mr. Drury, his expert modeller, of a large number of the Bush natives of South-West Africa, and these will doubtless remain for all time as good examples of fairly pure Bushmen.

In the Kimberley Museum is a small but excellent collection of Bush skulls procured from the Kalahari by Miss M. Wilman, with the assistance of Mr. G. St. Ledger Lennox. Miss Wilman has very kindly allowed me to examine them; they are the best skulls in existence of the Kalahari Bushmen, and provide the anthropologist with lasting and indispensable material for his study of this race.

These Kalahari Bush skulls belong to various tribes. By 115 Bush is meant a Bushman of the Orange River valley and of the south of South-West Africa. Those marked Abiam are from a locality in Gordonia, as is also, I believe, the one marked Sleepklipkop. The skull marked Kowa was believed by Mr. Lennox to be a cross between the Cape Bush and the Hai-Guis or Bush of the south-east part of South-West Africa.

The following are the principal cranial measurements of these skulls:—

BUSHMAN SKULLS FROM THE KALAHARI. (PL. VII, VIII.)

	143. Kurn- man.	161. 115 Bush.	144. 115 Bush.	150. Abiam.	151. Abiam.	175. Kowa.	145. Sleep- klipkop.
Glab. occip. length ...	176	182	171	165	183	183	176
Max. breadth ...	133	131	125	128	135	134	132
Basi-breg. height ...	123	119	120	115	119	127	123
Bimaxill. breadth ...	82	91	78	87	97	98	93
Bixygomat. breadth ...	120	128	115	113	126	120	121
Naso-alveolar height ...	62	57	54	58	60 ?	62	57
Orbital breadth ...	37	38	37	35	40	41	38
Orbital height ...	29	34	31	33	29	31	30
Bidacry. breadth ...	20	18	19	23	24	22	15
Nasal height ...	43	41	40	42	42	49	39
Nasal breadth ...	23	25	25	25	30	26	23
Int. bi-orbital breadth ...	92	92	91	80	102	94	91
Basi-nasal length ...	87	93	89	87	93	95	91
Basi-alveolar length ...	87	92	88	87	94	89	92
Int. palatal length ...	47	45	46	45	49	47	46
Int. palatal breadth ...	35 ?	40 ?	36	37	40 ?	34	35 ?
Dental length ...	—	—	40	40	—	42	39
Cephalic index ...	75·6	72	73	77·6	73·8	73·2	72
Altitudinal index ...	69·5	65·4	70·2	69·7	65	69·4	69·5
Breadth-height index ...	92·4	90·9	96	89·8	88·1	94·8	93·2
Nasal index ...	53·5	60·9	62·5	59·5	71·4	65	58·9

It will be seen that these Kalahari Bush people form a fairly homogeneous race. They are short in stature and their heads are small. Five of the seven are dolichocephalic, and all are chamæcephalic. All are either orthognathous or mesognathous. All are platyrrhine, and one has the very remarkable nasal index of 71·4; and all are microdont.

Some further interesting points will be observed when the measurements are compared with those of the Cape Bushmen.

It has been pointed out by various observers that the Cape Bushmen were, and are, less stunted than the Bushmen of the desert regions, and that many are



FIG. 1.—*Norma lateralis*, BUSHMAN, UNDEGENERATE MALE, OLD GRAVE, BEAUFORT WEST.



FIG. 2.—*Norma lateralis*, BUSHMAN, DWARF MALE, HOPETOWN DISTRICT.

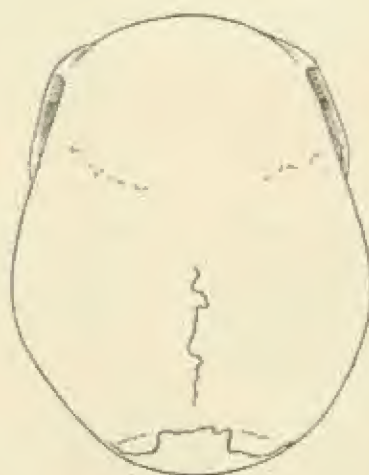
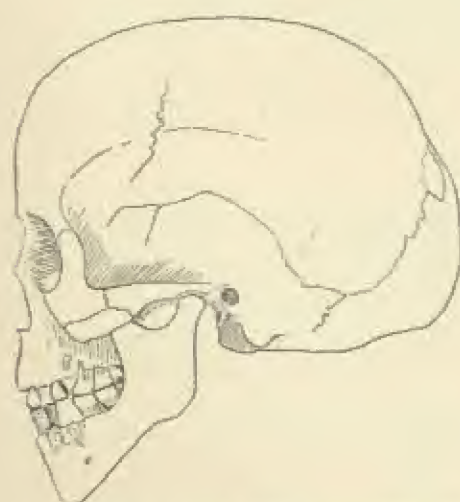


FIG. 3.—*Norma lateralis* AND *Norma verticalis*, BUSHMAN, FEMALE (DWARF), HOPETOWN DISTRICT.

physically fairly well developed. Miss Wilman has called my attention to the fact that the children of Dr. Bleek's old Bushmen, through being well fed, developed into men and women of quite respectable stature. In a letter Miss Wilman states : " In South-West Africa I saw two good Bush boys. One had lived always on a

farm, the other on the veld. The former was quite well grown, the latter small and stunted. In Gordonina, if you object to a Bushman on the score of his height, you are informed that he is a farm Bushman—quite pure, but well fed from his youth."

Though pure old Bushman skulls are hard to obtain in Griqualand West, still I have been fortunate in getting a few, and I have also succeeded in obtaining some splendid specimens of pure old Cape Bushmen from the Beaufort West and Murraysburg districts (Fig. 1). These Cape Bushmen are not stunted types; some are well developed and powerfully built. That they are Bushmen is, I think, beyond all question. The skulls differ from those of the Kalahari Bushmen in being larger and in a few other points, but they make no closer approach to the Hottentot. They are rather further from the Hottentot types than are the Kalahari Bush skulls, and I think we are justified in regarding one or two of them as representing a purer type of Bushman than is to be found either in the Kalahari or South-West Africa; probably they are the purest Bushman remains that have yet been discovered.

In the accompanying table of measurements I have divided off the Bushmen from the south of the Orange River from those from north of the Orange River.

BUSHMAN SKULLS FROM CAPE COLONY AND GRIQUALAND WEST.

	Hopetown 1.	Hopetown 2.	Murraysburg 1.	Murraysburg 2.	Beaufort West.	Douglas.	Ramah (Kimb.-Mus.)	Schmidts-drift.	Campbell.
	♂	♀	♂	♀	♂	♂	♀	♀	♀
Glab.-occip. length ...	178	179	185	190	183	182	182	180	180
Max. breadth...	140	141	138	145	141	134	134	137	134
Basi-breg. height ...	124	125	129	125	124	127	126	127	125
Bimaxill. breadth ...	94	85	95	90	98	96	87	90	96
Bizygomatic breadth ...	134	122	123	123	130	123	115	118	122
Naso-alveolar height...	—	67	74	59	72	63	60	62	61
Orbital breadth ...	—	35	40	35	43	42	42	37	40
Orbital height ...	—	30	33	28	34	28	30	29	28
Biacry. breadth ...	—	—	26	27	24	23	19	21	23
Nasal height ...	50 ?	45	50	42	46	42	42	44	42
Nasal breadth ...	24	21	28	25	24	30	25	26	25
Int. bi-orbital breadth ...	95	88	102	95	104	101	95	95	100
Basi-nasal length ...	—	93	98	102	94	98	85	94	98
Basi-alveolar length ...	95	84	94	100	94	93	84	91	98
Int. palatal length ...	—	46	50	47	53	52	44	44	50
Int. palatal breadth...	38	35	38	40	43	43	30	38	38
Dental length...	43	40	41	—	41	40	39	—	—
Cephalic index ...	78.1	78.8	74.6	76.3	77	73.6	73.6	76.1	74.4
Altitudinal index ...	69	69.8	70.1	65.8	67.7	69.2	68.7	66.9	69.3
Breadth-height index ...	88.5	88.6	93.5	86.2	88	94.8	94	92.7	93.3
Nasal index ...	48 ?	46.6	56	59.5	56.2	71.4	59.5	59.1	59.5

If the measurements of these Bushmen from Cape Colony and Griqualand West be compared with those of the Kalahari, it will be seen, as might be expected, that those of Griqualand West agree closely with those of the Kalahari, while those of the Cape Colony differ appreciably.

The Cape Colony Bushman is larger in stature than his northern relative, and his head is quite appreciably broader. The average breadth of the skull in the eleven northern specimens is 132.5 mm., and no specimen has a breadth of more than 137 mm. The five specimens of the Cape Bushmen have an average breadth of skull of 141.2 mm. Shrubbsall gives the average breadth of nineteen Hottentot skulls as 133.47, and even large Kaffirs which have a skull length of 190.61 on the average have an average breadth of only 137.33. It will thus be seen that the great breadth of the Bushmen skulls is neither a Bantu nor a Hottentot character. On the other hand, the appreciable narrowing of the skull in northern Bushmen is most probably due to some admixture of Hottentot blood.

One of the most striking differences in the cranial measurements of the Bushmen from those of the Hottentots and Bantus is that the height is invariably less than the breadth and generally much less. The average breadth-height index is 88.9 in the Cape Colony Bushmen examined, and 92.8 in the northern Bushmen. Shrubbsall's figures give a breadth-height index of 91.2 for the "Strandloopers" and 93.8 for "Bushmen." While doubtless the majority of Shrubbsall's Strandloopers are fairly pure Bushmen, one or two are mainly Hottentots, and the inclusion of these affects the averages.

While cranial measurements readily tell a Bushman skull from any other, even a hasty glance tells much more readily. The shape of the Bushman skull is quite unlike that of any other known race. The parietal eminences are well marked, and make the parietal region always much wider than the frontal. Then the whole parietal is depressed in a curious way. The basi-bregmatic measurement does not bring out the true Bushman peculiarity. In many skulls the whole parietal region is depressed as if a board had in infancy been tied against the posterior half of the parietals and pressed in the direction of the alveolar point. This peculiar shape is most marked in the skulls which I regard as the purest Bushmen. In the Kalahari Bushmen the parietal depression, though present, is less marked.

Another point which is characteristic of the Bushman skulls is the relative shortness of the occiput. This is a character that readily distinguishes Bushmen from Hottentots.

HOTTENTOTS.

While the Bushmen may be regarded as a well-marked type, quite satisfactorily known, our knowledge of the Hottentots is less satisfactory. In Cape Colony and South-West Africa there are to-day many thousands of so-called Hottentots. They might almost be considered as forming a nation. They have a distinct and highly-

evolved language differing entirely from that of the Bushmen, and their customs and civilization also differ greatly. Unfortunately our knowledge of the anatomical structure of these peoples is unsatisfactory, and our knowledge of the history of the Hottentots, notwithstanding all the historians have to tell us, is also far from satisfactory. It is hard to believe that the Hottentot nation comprised only a few thousands of wanderers who came down from Victoria Nyanza to Table Bay and then passed along the south coast and up the Orange River valleys. The mere fact that to-day a whole Bantu tribe—the Berg Damaras—speaks the Hottentot language seems to suggest that once the Hottentot nation was one of importance. And the fact that the Koranas, usually regarded as merely a Hottentot tribe, differ considerably in physical characters from the Hottentots of the west coast, suggests that there are many problems yet to be solved, and that the whole case is not so simple as the historians would have us believe.

To-day, if one wishes to study the Hottentot race, one is confronted with difficulties. One may study the Namaquas, or the Griquas, or the Koranas, or the Hottentots of the south coast or those of South-West Africa. But everywhere one is told that these Hottentots are not pure, but have a very considerable admixture of white blood. Doubtless in very early days there was a little admixture, and there is even to-day a little further admixture going on, but I think it is far less than is generally supposed. There must, I think, be many hundreds of Hottentots in Namaqualand with so little white blood in their veins that the amount may be regarded as negligible, and even the admixture of Bushman blood is probably small.

One would like to see a careful investigation of the old "Strandloopers" of the west coast. As already mentioned, the skulls figured by Shrubsole from Blaauwberg Strand appear to be fairly pure Hottentot types, and one of these is sub-fossil and probably of very considerable antiquity. Unfortunately these skulls are in Capetown and I have not had an opportunity of examining them.

The best specimens of Hottentots which I have been able to examine are from old graves at Upington. These graves are marked occasionally by only a few stones, but usually by a heap 2 or 3 feet in height, sometimes even 5 feet and then of enormous size. These cairns are well built of large water-worn stones. On digging into one of them the stones are found to be continued into a circular pit about 3 feet in diameter. In this the stones are not usually built so closely to each other as in the cairn, and frequently there is more sand and earth than stones. About 2 feet below the level of the surrounding ground some large flat stones are met with, and immediately below these lies the skeleton, invariably on its side. The back is usually considerably curved, and one hand is invariably placed against the face; frequently both are. The thighs usually lie at about right angles to the lumbar vertebrae, and when the back is much curved the knees nearly reach the forearms. More frequently the knees are at a considerable distance from the forearms. In all

cases the tibiae and fibulae are closely flexed on the femora so that the heels are always near to the ischial tuberosities. In four out of eight skeletons the head was found to be directed towards the south, in one towards the east, in two towards the west, and in one to the north-east. Four were lying on the right side, and four on the left. We may, therefore, conclude that there was no plan either as to the side on which the body was laid or as to its orientation. In no graves were any pots found, but several contained chipped or rounded ostrich shell beads.

The age of the graves may be regarded as between 100 and 250 years. In some graves the remains were found to be hopelessly fragile, but six good skulls were obtained, of which the measurements are here given. It will be seen that four belong to a very homogeneous type, and two others to a different race. The four large-headed specimens represent a tall powerful race, with large dolichocephalic

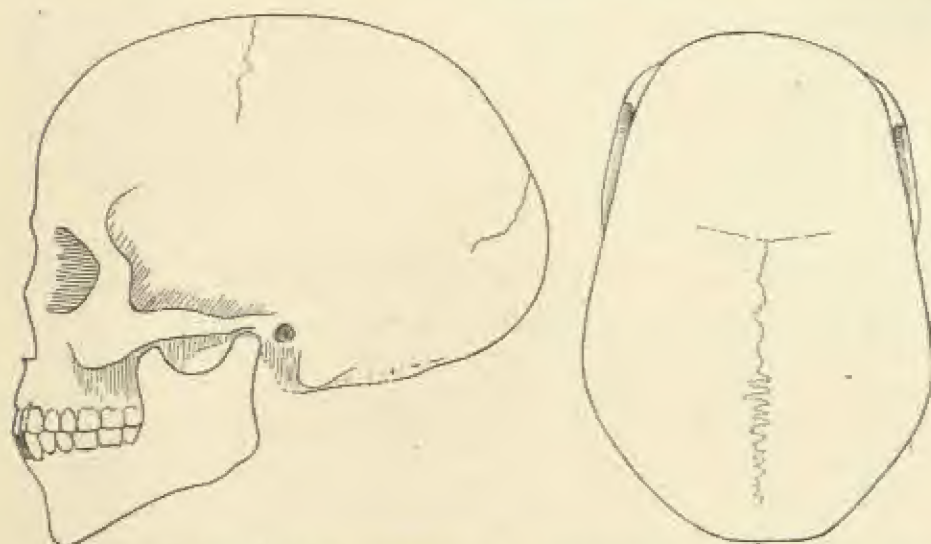


FIG. 4.—*Norma lateralis* AND *Norma verticalis*, HOTTENTOT MALE, OLD GRAVE, UPINGTON.

heads. The forehead is low but very prominent, and the supraorbital ridges are very feebly developed. The line of the nose is almost continuous with that of the forehead, as in a Greek statue; the nose itself must have been fairly well developed, and not very broad. The eyes must have been prominent. The forehead is narrow, and the parietal eminences are distinctly marked, though the parietal diameter is not great. The face is only slightly projecting, but the teeth project considerably and present some sub-nasal prognathism (Fig. 4).

The race, though it resembles the Bushmen in a number of facial characters, differs strikingly from them in many others. The heads are exceptionally large. The smallest—a female—has an antero-posterior measurement of 139 mm., and the group of four affords an average measurement of 196.5 mm. While the Bushman skull is mesaticephalic and sometimes nearly brachycephalic, these

Upington Hottentots are extremely dolichocephalic, having an average cephalic index of 67·4, and one skull has the remarkably low index of 64·1.

HOTTENTOT SKULLS FROM UPINGTON.

	Old Upington Hottentots.				Associated Females.	
	♂	♂	♀	♀	♀	♀
Glab.-occip. length	202	196	195	193	180	177
Max. breadth	139	134	125	132	130	131
Basi-breg. height	143	132	137	136	118	128
Bimaxill. breadth	—	—	87 ?	93	100	91
Bizygomatic breadth	127 ?	—	—	126	121	127
Naso-alveolar height	69	63	70	64	66	64
Orbital breadth... ..	42	38	40	43	43	39
Orbital height	31	31	35	34	34	32
Bidacry. breadth	26	26	—	22	—	26
Nasal height	47	45	50	39	—	45
Nasal breadth	27	27·5	28	26	—	26
Int. bi-orbital breadth	103	98	93	—	—	98
Basi-nasal length	110	105	114	104	91	99
Basi-alveolar length	103	101	93	108	102	99
Int. palatal length	—	52	—	48	—	43
Int. palatal breadth	37	38	—	38	38	40
Dental length	44	44	41	38	39	44
Cephalic index	68·8	68·4	64·1	68·4	72·2	74
Altitudinal index	70·8	67·3	70·3	70·5	65·5	72·3
Breadth-height index	102·9	98·5	100·6	103	90·1	97·7
Nasal index	57·4	60·1	56	66·6	—	57·8

The skull differs from the Bushman type, not only in being extremely dolichocephalic, but in having a much greater height measurement. Owing to the great length of the Hottentot skulls the altitudinal or length-to-height index does not differ appreciably from that of the Bushman; but the breadth-height index is seen to differ very greatly. In pure Bushmen the average is 88·9; in these Upington Hottentots it is 103·5. So that while the Bushman is tapeinocephalic, the Hottentot is acrocephalic.

The two specimens which I exclude from the six as showing evidences of another race are both female skulls. They belong to a mixed race which is partly Bushman and partly Hottentot, but there is also evidence, too imperfect to lead to any definite conclusions, of some other blood, apparently neither Bushman, Hottentot nor Bantu.

The large dolichocephalic race is certainly not Bushman, and as certainly it is not Bantu. Though we rarely to-day see Hottentots with such large heads, the characters are all Hottentot characters, and we are probably justified in regarding these old Upington natives of perhaps 200 years ago as representing as pure a type of Hottentot as we are likely to find.

KORANA.

All the old travellers agree in stating that the tribes which inhabited the Orange River and Vaal River valleys 100 years ago were Koranas. These Koranas spoke

a dialect of the Hottentot language, but are always clearly distinguished from Hottentots proper, and the historians tell us that they came from the western province of Cape Colony only 100 years or so before this. Now, in the Douglas district, we have many graves of the inhabitants of the Vaal River valley of 100 to 200 years ago, and we may safely regard these as the people referred to by the old

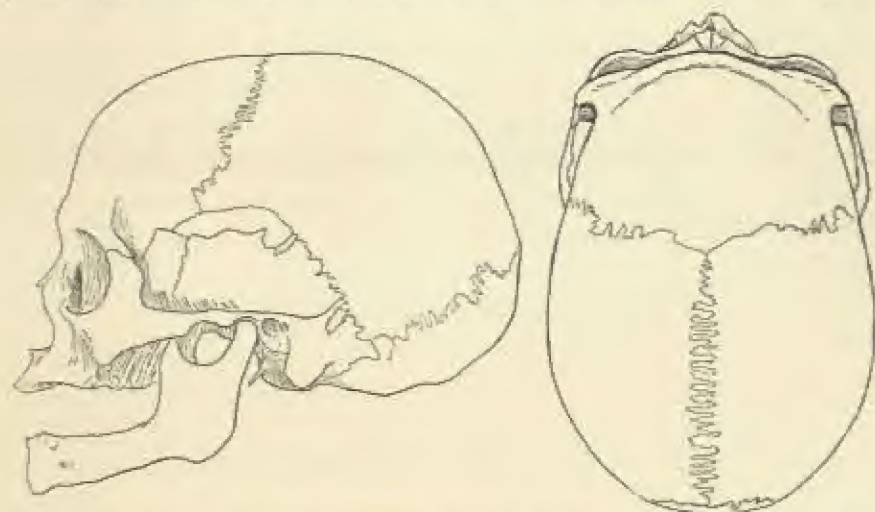


FIG. 5.—*Norma lateralis* AND *Norma verticalis*, KORANA MALE, LIAES TRIBE, KENHARDT DISTRICT.

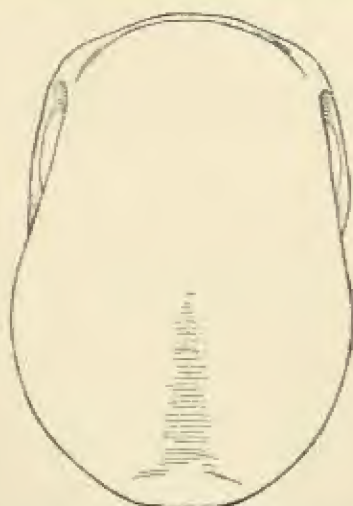


FIG. 6.—*Norma verticalis*, KORANA, MALE, OLD GRAVE, DOUGLAS.

travellers as Koranas, or Korannas, or Koras. To-day there are still a few survivors of these Koranas in a quite pure state, but in the Douglas district there are fewer pure Koranas than pure Bushmen. When we examine carefully one of these living Koranas we are struck by the fact that while he is manifestly allied to the Hottentots yet in certain characters he differs appreciably from them. In the first place there is, I think, quite definite evidence of Bantu blood. This is seen in the darker

complexion, greater development of hair on the head and face, and in the coarser features. Whether, however, the Bantu strain was acquired after the Koranas came to South Africa or before that time the evidence does not show. If they only came to the Vaal River valley within the last 200 years then the probability is that the Bantu blood was acquired somewhere in the north before the southern migration.

In addition, however, to the Bantu strain there is some evidence of other and much more remarkable blood. In a number of Koranas who regard themselves as of perfectly pure blood we find clear traces of an Australoid race, or at least a race with well-developed supraorbital ridges (Figs. 7, 8). Large supraorbital ridges are not a characteristic of either Bushmen, Hottentots or Bantus, but as will be shown presently there is evidence of a race having lived in South Africa which had large almost Neanderthal-like supraorbital ridges. Again, however, the evidence is not clear whether the Koranas met this Australoid race in South Africa or further north, but as with the Bantu blood the probabilities seem rather more in favour of the Australoid race having been encountered in the north.

In the table given below are measurements of skulls of Koranas from old graves near Douglas, and also of a pure-blooded Korana who recently died in Douglas, and of a skull from Modder River which shows the supraorbital ridges well developed (Figs. 5, 6, 7, 8) :—

KORANA SKULLS.

	Old graves, St. Clair.				Old graves, Backhouse.				Very old grave, Griquatown.	Very old grave, Backlands.	Old grave, Modder River (Kinb. Mus.)	Present-day pure Korana, Kenhardt.
	♀	♂	♂	♀	♀	♂	♀	♀	♀	♂	♂	♂
Glab.-occip. length ...	192	196	190	195	186	193	185	185	178	189	185	185
Max. breadth ...	133	134	123	131	126	138	126	128	128	128	133	131
Basi-breg. height ...	131	130	135	134	128	134	133	126	132	126	125	125
Bimaxill. breadth ...	98	101	93	96	97 ?	93 ?	89	96	95	88	93	93
Bizygomatic breadth ...	—	124	122	130	126	132	120	122	126	128	122	—
Naso-alveolar height ...	66	68	76	72	63 ?	67	64	71	62	65	60	—
Orbital breadth ...	40	—	—	38	38	42	39	41	38	38	38	—
Orbital height ...	35	—	—	33	30	34	38	32	32	32	32	—
Bidacry. breadth ...	—	—	—	23	28	24	25	30	20	26	24	—
Nasal height... ..	45	45	—	49	42	45	43	48	42	46	43	—
Nasal breadth ...	31	28	—	29	29	28	27	28	25	25	25	—
Int. bi-orbital breadth ...	97	—	—	97	103	101	101	104	97	101	100	—
Basi-nasal length ...	103	105	—	100	97	105	95	101	100	101	96	—
Basi-alveolar length ...	100	98	—	99	99	103	92	99	97	93	100	—
Int. palatal length ...	46	53	—	56	46	—	51	52	49	45 ?	50	—
Int. palatal breadth ...	37	42	—	40	36 ?	38	38	40	40	33 ?	40 ?	—
Dental length ...	38 ?	—	39	43	35	39	38	—	42	33 ?	—	—
Cephalic index ...	69.2	68.3	64.2	67.2	67.7	71.5	68.1	69.2	71.9	70.3	70.8	—
Altitudinal index ...	68.2	66.3	70.1	68.7	68.8	69.4	71.9	68.1	74.1	66.6	67.6	—
Breadth-height index ...	98.5	97	109.7	102.3	101.6	97.1	105.5	98.4	103.1	94.7	95.4	—
Nasal index ...	68.8	62.2	—	53	69	62.2	62.8	58.3	59.5	54.3	60.5	—

If the measurements of these Korana skulls are compared with those of the Upington Hottentots it will be seen that there is much agreement. Each race is extremely dolichocephalic, but the Korana is a little less so, the average being 68·9 as against 67·4 in the Upington Hottentots. The breadth-height index in the latter has an average of 103·3; in the Koranas 100·3. Still, considering the small number of skulls examined, the differences are probably of no great importance, and there can be little doubt that the Koranas are Hottentots with a slight admixture of Bantu and in some cases at least of an Australoid element.

The skull from Modder River agrees sufficiently closely with the Korana skulls to justify its assignment to this group. Its breadth-height index is considerably below the average, but in this it agrees with the undoubted Korana from Kenhardt.

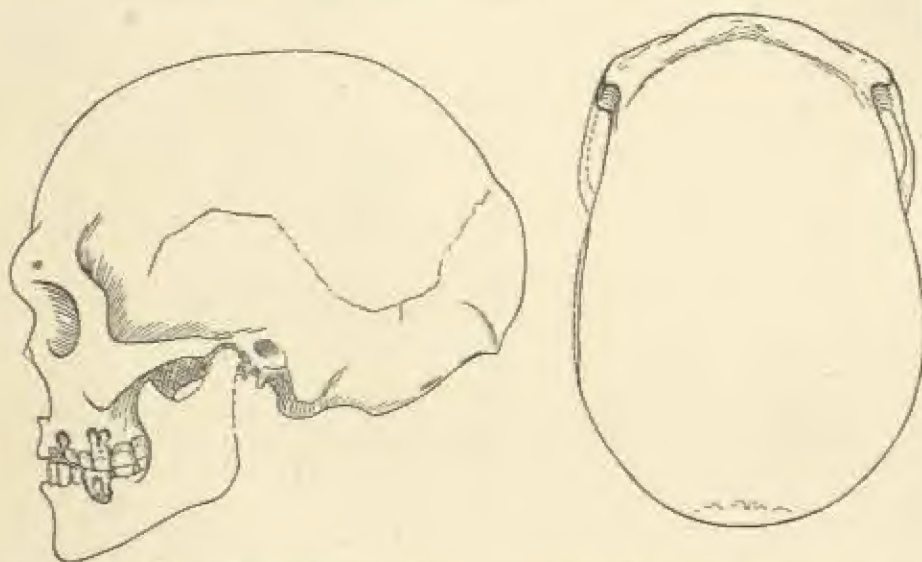


FIG. 7.—*Norma lateralis* AND *Norma verticalis*, AUSTRALOID (?) KORANA, MALE, OLD GRAVE, BAYVILLE, EAST PROVINCE.

Curiously enough these are the two skulls which have the greatest development of the supraorbital ridges.

There is one point which especially distinguishes those Korana skulls with an Australoid strain from Hottentots, and that is the way the orbit appears to project from the face when the skull is looked at in a half-side view. The orbits are well forward, and the outer margin of each is practically on the plane of the back of the lachrymal; the frontal is narrow, and with the supraorbital ridge the outer orbital process of the frontal is made to project to an unusual degree.

AUSTRALOID RACE.

It may seem a little premature to speak of a South African Australoid race before one is in a position "to deliver the goods." So far I only know of one skull

—and this probably of no very great antiquity—which may be regarded as coming near to that of the supposed Australoid of the south. The skull comes from Bayville near Port Elizabeth. It is not at all fossilized but is evidently of considerable age, and it differs from any other skull that has been found in South Africa, so far as I am aware, in the great development of the supraorbital ridges. As will be seen from the illustrations (Fig. 7), the skull resembles in general shape that of the Koranas, and rather less that of some Bantus, and differs almost entirely from the Bushman type. The brow is well developed and not unlike that of some Bantus, but the presence of large supraorbital ridges gives it a very different appearance. These ridges are about as well developed as in the average male Australian, but the forehead is better developed in South African skull. The parietal region differs from that of both the Bantu and the Australian in being low,

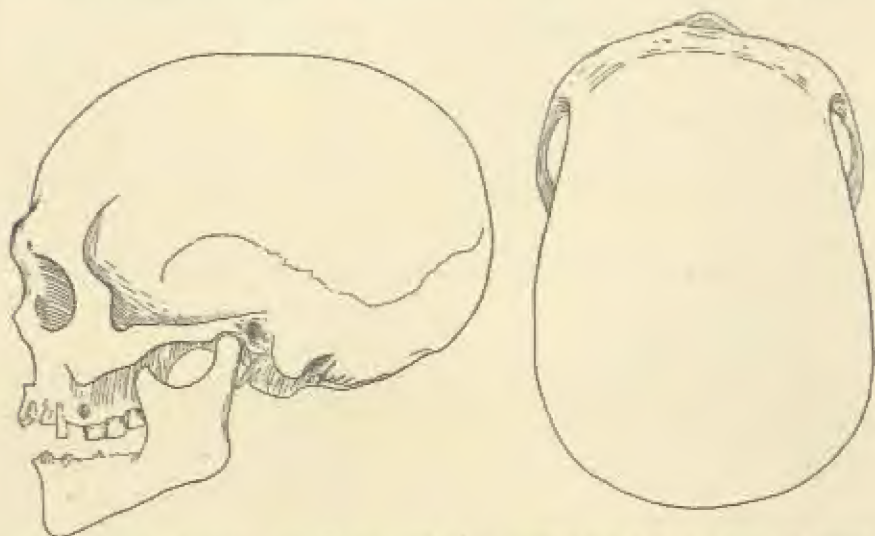


FIG. 8.—*Norma lateralis* AND *Norma verticalis*, AUSTRALOID KORANA, MODDER RIVER.
(KIMBERLEY MUSEUM.)

and in this agrees with the Korana and the Bushman. As will be seen by the measurements given, it agrees closely with the average Korana. The face is short, the nose broad and the orbits low.

The cranial bones are of great thickness. The greater part of the frontal bone is 11 mm. and much of the parietal about 8 mm. thick.

The recent discovery in Rhodesia of the skull which forms the type of *Homo Rhodesiensis* shows that a race of man once lived in South Africa which, like Neanderthal man, had huge supraorbital ridges. Of course, no one would care to venture to suggest any but a very remote affinity between the Rhodesian skull and this skull from Bayville, but the fact that a race once lived in South Africa which had huge brow-ridges suggests the possibility that some traces of its blood may have passed on to some of the later races.

An Ovambo skull (Fig. 9 and Pl. VIII, Fig. 4) in the Kimberley Museum also shows some suggestion of an Australoid element. The skull is, of course, a Bantu skull, and yet it bears considerable resemblance to the Bayville skull. The one is a Bantu with a little Australoid strain, the other a Korana with a very considerable Australoid strain. In the table given below I have placed the measurements of these two skulls side by side for comparison.

An interesting point raised by the Bayville skull is the question whether the historians are right about the migrations of the Koranas. If the Koranas only came from the Western Province of Cape Colony about 200 years ago, where did the Modder River skull come from, and how did this other skull get to the Eastern Province? One is inclined to conclude that there may have been a much earlier Hottentot immigration probably down the eastern side of South Africa before the Bantus came down, and that these tribes acquired some admixture of Bantu blood in the north and some further admixture of Australoid race during their migration.

	Bay- ville skull.	Ovambo skull (Kimb. Mus.), 152.		Bay- ville skull.	Ovambo skull (Kimb. Mus.), 152.
	♂	♂		♂	♂
Glab.-occip. length ...	201	185	Int. bi-orbital breadth ...	100 ?	103
Max. breadth ...	136	132	Basal-nasal length ...	104	105
Basal-breg. height ...	137	134	Basal-alveolar length ...	96	107
Bi-maxillary breadth ...	—	97	Int. palatal length ...	50	55
Bi-zygomatic breadth ...	131	135	Int. palatal breadth ...	39 ?	50
Naso-alveolar height ...	62	56	Dental length ...	39	42
Orbital breadth ...	41	38	Cephalic index ...	67·7	71·3
Orbital height ...	30	30	Altitudinal index ...	68	72·4
Bidaery. breadth ...	26 ?	25	Breadth-height index ...	100·7	101·5
Nasal height ...	45	43	Nasal index ...	62·2	62·8
Nasal breadth ...	28	27			

This Ovambo skull is of interest from the enormous width of the palate. The transverse measurement over the last molars is 71 mm. Still, in a Morolong skull in my possession, the width across the last molars is 76 mm.

BOSKOP SKULL.

In dealing with the early South African races some mention must be made of the Boskop skull found in a surface laterite deposit near Potoschefstroom in the Transvaal in 1913, and briefly described by Mr. FitzSimons of the Port Elizabeth Museum, and later more fully by Dr. S. H. Haughton. Unfortunately the skull is very imperfect, the base of the skull, nearly the whole face, and much of the lower jaw being unknown. Still, what is known indicates a skull of an unknown type.

The skull is of enormous size. The glabello-occipital length I estimate at 210 mm. Houghton estimated it at 205. The maximum breadth I estimate at 160; Houghton puts it at "probably 154." The basi-bregmatic height I estimate at 139 mm. The cranial capacity must have been about 1950 c.c. The cephalic index is about 76·2, the altitudinal index about 66·2, and the height-breadth index about 86·8. The cranial bones are in parts extremely thick, even up to 15 mm.

The remarkable thing about this skull is, that though one of the largest human skulls on record, and one of the thickest, its cranial indices so far as we know them agree more closely with those of the Bushmen than with any other known type. One of the Bush skulls of which I give the measurements has the three cranial indices 76·3, 65·8 and 86·2, which are really remarkably near those of the Boskop skull with 76·2, 66·2 and 86·8. And we are probably justified in concluding that the Boskop type is the direct ancestor of the more or less degenerate Bushman of recent times.

The low altitudinal index removes the Boskop man entirely from any near affinity with the Bantus.

Elliot Smith, from an examination of the endo-cranial cast, considered that "it probably represents the earliest (not necessarily in actual age) known phase of *Homo sapiens* in the course of his transformation from a condition analogous to that of Neanderthal man to that of Cro-magnon." The skull is completely fossilized and may be of very great antiquity.

HOMO RHODESIENSIS.

Within the last few months another remarkable early human skull has been discovered in South Africa. This is the famous Broken Hill skull, which has recently been figured and briefly discussed by Smith Woodward, Keith, Elliot Smith and others. From the excellent figures that have been published everyone is familiar with the general features. It bears some resemblance to the Neanderthal type, especially as seen in the Gibraltar skull, and Keith considers it a "first-cousin to Neanderthal man." The face, however, differs considerably, and there are a number of other striking differences. Elliot Smith considers that "the evidence of the brain structure was quite conclusive that this individual of Rhodesia was very much more primitive than the Neanderthal race of Europe."

The general opinion seems to be that the Rhodesian skull is of comparatively recent date, but I cannot regard the evidence as conclusive. When the animal remains associated with the skull have been fully examined we may have some satisfactory evidence of its age. So far I believe only the remains of the upper part of the cave have been examined, and not any from the deeper part. Yet even these have yielded bones of an extinct rhinoceros. If, on further exploration, no remains of animals differing greatly from those now living be found in the cave, the human skull might nevertheless be of very great age.



FIG. 1.—KALAHARI BUSHMAN (KURUMAN). NO. 143.



FIG. 2.—KALAHARI BUSHMAN. NO. 161.



FIG. 3.—KALAHARI BUSHMAN. NO. 144.



FIG. 4.—KALAHARI BUSHMAN (AHIAM). NO. 150.





FIG. 1.—KALAHARI BUSHMAN (ADAM), NO. 151.



FIG. 2.—KALAHARI BUSHMAN (KOWA), NO. 175.



FIG. 3.—KALAHARI BUSHMAN (SLERPKLEPROF), NO. 145.



FIG. 4.—OVAMBO SKULL.



The skull differs from that of modern man most strikingly in the enormous development of the supraorbital ridge and the large size of the palate and jaw. Unfortunately no full description with measurements of the skull has yet appeared, and until we have further details it will be impossible to say whether the Australoid characters appearing in various South African native skulls may or may not be due to an admixture of the blood of *Homo Rhodesiensis*. But certainly the fact that we do come across skulls with huge supraorbital ridges, and the knowledge that an early human race which had huge ridges once inhabited South Africa, seem to point to a not improbable connection between the two.

CONCLUSION.

The oldest human types known from South Africa are the races represented by the Rhodesian Broken Hill skull and the Boskop skull. Each of these skulls is probably of great antiquity, but at present we have no evidence on this point, nor can we say which is the older. Not improbably the race represented by the Boskop skull are the direct but remote ancestors of the Bushmen of to-day.

The Hottentots appear to have some affinity with the Boskop type, and may perhaps prove to be an admixture of a northern dolichocephalic race with a southern race such as is represented by the Boskop skull.

The Korana, or perhaps one ought rather to say the eastern Hottentots, appear to be Hottentots who have acquired some strain of negroid blood and a considerable strain from some Australoid race; this latter possibly being derived from the race represented by the Broken Hill skull.

I am much indebted to Miss M. Wilman for permission to examine the Bushman and other skulls under her care, and for other kind help; and to Mr. A. M. Cronin for the excellent photographs which he has taken of the Bushman skulls in the Kimberley Museum collection.



FIG. 9.—OVAMBO (see also PL. VIII, FIG. 4.)

CARVED MONOLITHS AT JĀMŪGŪRĪ IN ASSAM.

By J. H. HUTTON, C.I.E., I.C.S.

[WITH PLATES IX—XII.]

IN his *History of Upper Assam, Upper Burma and the N.E. Frontier*¹ Colonel L. W. Shakespear states that there is at Deopāni near Bārpathār² a single stone pillar carved like those at Dīmāpūr. Last June (1922) I searched in vain for it. I found, it is true, a great carved stone in the forest, but it was carved with the figure of a Hindu goddess in high relief, and was of quite a different character from the monoliths at Dīmāpūr. The local inhabitants, both Mikirs and Assamese, knew of no other stone, and I feel sure that Colonel Shakespear must have been misinformed.

The same author on the same page refers also to the existence of monoliths at Jāmūgūrī, and here I was not disappointed. As far as I know no account of the Jāmūgūrī monoliths has been published, nor has the site yet been properly explored or even cleared. What monoliths there are are hidden in heavy forest; most of them have been thrown down by earthquakes or falling trees, and without a more detailed and lengthy investigation than I was able to undertake, it is impossible to say whether there are other stones of which no trace is at present visible. The fall of some of them, however, must have been comparatively recent, for a Lhota interpreter with me could remember when all but two of those we saw were standing, and now only five out of about twenty-six remain upright. I made a rough plan of the site, and took such photographs as were possible in heavy forest on a dull afternoon.

The site of the monoliths is not far from the village of Kāsumārigaon, close to the bank of the Dāyāng river about seven miles south of Jāmūgūrī Railway Station on the Assam-Bengal Railway. The place, which is in the Government Reserved Forest, is called by the Lhotas in the neighbouring hills *kimung*, "the house site," and is surrounded by a more or less circular rampart and ditch. The accompanying plan shows the relative positions of the ten complete stones and two fragments. The stones face west instead of east as at Dīmāpūr, but both at Dīmāpūr and here the stones face the adjacent river, here the Dāyāng, at Dīmāpūr the Dhānsiri (in Kachāri *Dīmā*, "the great river"), which must at some

¹ P. 80.² Not to be confused with the better-known Deopaul mentioned on p. 86.

time have run quite close to the monoliths there, though it has since receded, an orientation which adds colour to the belief that those at Dīmāpūr, at any rate, were erected by the Kachāris, whose veneration for running water has been more than once noted, and who used to throw the frontal bones of their dead into a river,¹ at the harvest festival.

There are, however, considerable differences between the monoliths at Jāmūgūrī and those at Dīmāpūr, which suggest that Jāmūgūrī represents a later development

A. Rough Site plan of Jāmūgūrī monoliths.

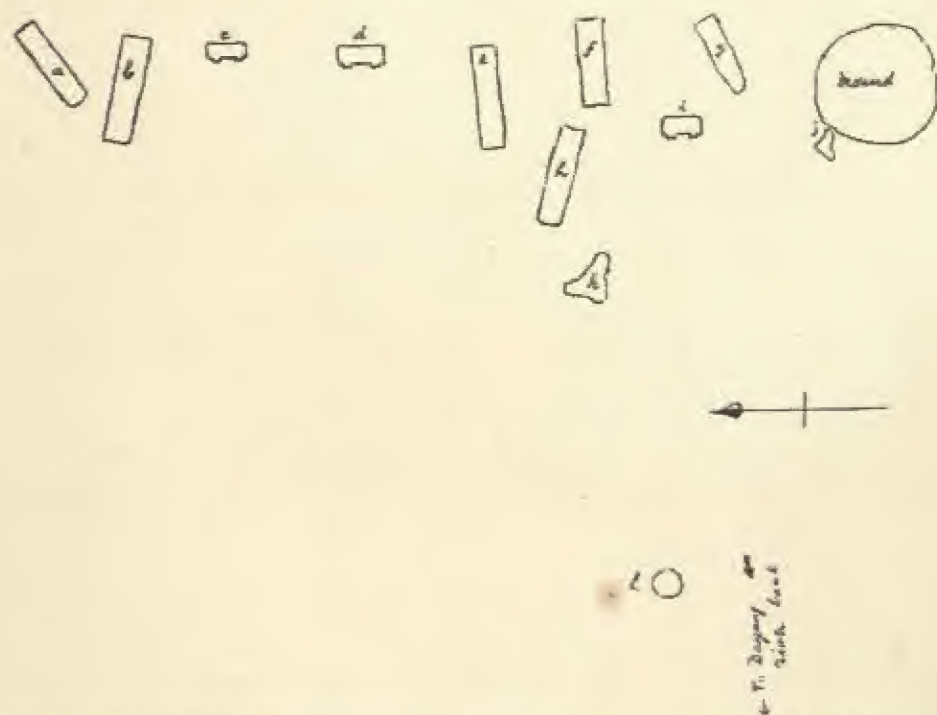


FIG. 1.—THE OTHER STONES ARE TO BE FOUND LYING SOUTH OF THE MOUND, AND, GENERALLY SPEAKING, IN THE SAME STRAIGHT LINE AS *a* TO *g*.

of the practice as represented by Dīmāpūr. This is the more remarkable as Jāmūgūrī is thirty miles north of Dīmāpūr, whereas the Kachāri civilization moved southwards in its decline, the headquarters of the kingdom going to Maibong in the North Cachar Hills, when Dīmāpūr was finally sacked by the Ahoms in 1536, while some of the Kachāris seem to have moved east into the Naga hills. The fact that the Lhotas speak of the Jāmūgūrī site as that of a dwelling-place (*kimung*) and that

¹ Endle, *The Kachāris*, pp. 34, 35; Soppitt, *Kachāri Tribes in the North Cachar Hills*, pp. 12, 39, 40.

the Lhota villages on the adjacent outermost range of hills used to include one called "Maibong," a Kachāri word meaning "much rice,"¹ suggests that the site at Jāmūgūrī was once occupied by Kachāris, who took refuge from the Ahom invasion by going up into the hills. If it is indeed the case that the Jāmūgūrī stones represent a more decadent type than those of Dīmāpūr, this may possibly be explained by supposing that at the time of their erection the influence of Hinduism had already begun to assert itself at the capital, and the erection of monoliths there had ceased. The influence of Hinduism is said to be marked in the Maibong remains, which have so far disclosed no monoliths like those at Dīmāpūr, though it was not until the Kachāri court had moved still further south, to Kāspūr in Cachar, that about 1790, probably, the Kachāri king was formally converted.² It is likely also that the Jāmūgūrī monoliths have been more influenced by extraneous art; the conventional tiger suggests it, and seems to indicate Shān influence, and it is possibly worth remark that the whole offers some comparison with the stone set up by the Mānipūris in Kohima in 1833.³ This stone (Pl. XI, Fig. 2) bears the traces of a similar lotus bud ornament at the top, a petalled lotus in the centre, the familiar Mānipūri "tiger," but without his horns, in a panel at the bottom with scrolls at the sides, such as might have been derived from those carrying the open lotus flowers on the Jāmūgūrī slabs, and a line of patterns running across above the panel as appears in the Jāmūgūrī stone between the panel and the lotus plant. The cow on the Mānipūri stone is, of course, a Hindu accretion. Apropos of the lotus pattern, it may be pointed out that Godwin-Austen, in his account of the monoliths at Dīmāpūr,⁴ remarks that the "simple circle with the petaliform pattern" is the only instance he knows of carving on the monoliths of the Khasi hills. It is possible, however, that in its original form this pattern represented the sun or moon⁵ and not the lotus at all. The peacock, very prevalent in the Dīmāpūr carvings, is used in Burma as a symbol of the sun.

The most noticeable difference between the Jāmūgūrī and the Dīmāpūr monoliths is the entire absence among the former, as far as can be seen, of the Y-shaped form, and the presence of what may be described as an erect carved slab (Pl. X, XI), which possibly takes its place, though the single cylindrical pillar (Pl. IX) which exists clearly demonstrates the connection of the whole with the Dīmāpūr remains. On these carved slabs the main design is a sort of plant bearing sometimes two but mostly four of the "petaliform pattern" circles, two on each side of what may be called the trunk of the plant, which is topped by a large pointed lotus bud. Below the base is a panel containing

¹ Endle, *op. cit.*, p. 6.

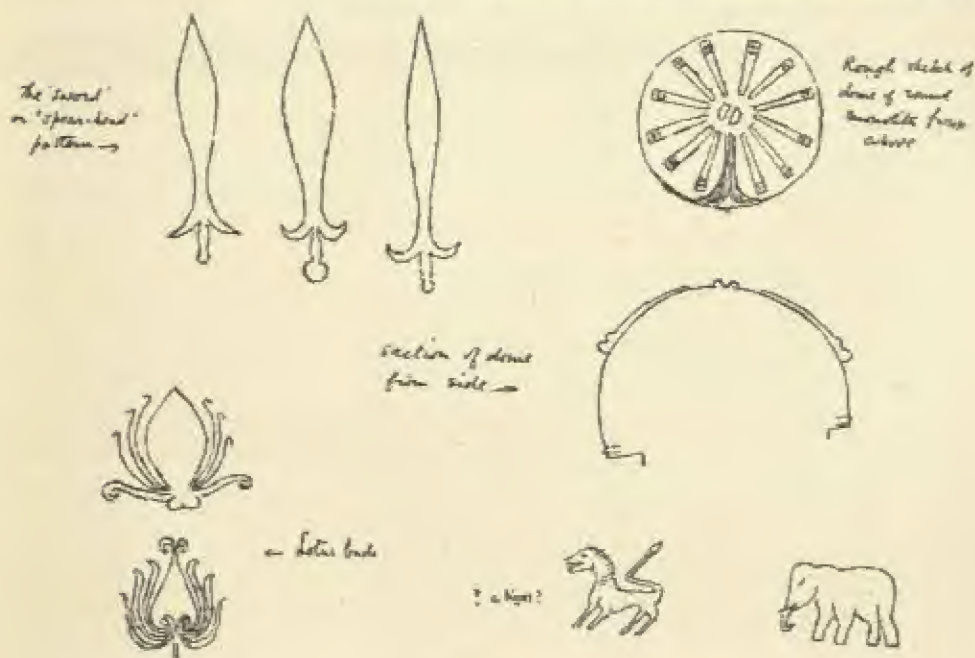
² Soppitt, *op. cit.*, p. 8.

³ Hodson, *The Meithei*, p. 92.

⁴ *J.A.S.B.*, No. 1 of 1874, p. 5.

⁵ *Journ. Roy. Anthropol. Inst.*, vol. lii, 1922, *Carved Monoliths at Dīmāpūr, &c.*

a pair of elephants or of tigers,¹ while there are also formal designs cut in the centre of what I have called the "trunk" of the plant. In the centre of one of the slabs still erect is the design which Godwin-Austen² suggests may represent a spear-head (Fig. 2). This design is very frequent indeed on the cylindrical stones at Dimāpūr, and both there and here appears more like a sword with the guard made in one piece with the blade,³ but its resemblance to the winged Angāmi spear-head⁴ cannot be overlooked. This design, too, is repeated all round the one cylindrical monolith found



3. Designs on the monoliths

FIG. 2.

¹ I have spoken throughout of these animals as "tigers," but, extravagant as it may seem to write of "lions" in Assam, I am not at all sure that that is not what they represent. Clearly carnivorous, they also clearly have manes. Moreover, the Thado Kukis, and, I am told, some of the tribes on the north bank of the Brahmaputra as well, have a word for an animal, which they describe as like a tiger, but more formidable and in particular as having a mane. They admit, of course, that their knowledge of it is only traditional. If I am correct in regarding this beast as a lion, the tradition is important, perhaps, in its bearing on origin and migration. It also suggests that the curious Mānipūri emblem, which is usually depicted as a sort of horned tiger, was originally a lion, whose mane, when it ceased to be understood, except as a convention, developed into a pair of horns. The Thado word for the maned carnivore of their traditions is *Mo*. Mr. J. H. Grace, of Haflong, tells me that the Kachāris know this animal as *singha*, "lion," but have no name for it in the Kachāri language.

² *Loc. cit.*, p. 4.

³ More closely still, perhaps, it resembles a bronze sword in the Nat. Museum, Dublin, figured by Joyce, *Smaller Social History of Ancient Ireland*, p. 55.

⁴ The Igorot of Luzon use a precisely similar type, by the way.

at the Jāmūgūrī site, as it is round many of those at Dimāpūr. But the "enemy's teeth" design¹ found on all the round Dimāpūr stones has been very much modified at Jāmūgūrī. The dome of the Jāmūgūrī cylindrical monolith, more elaborate than the Dimāpūr ones, is carved with rays in relief, and has a slight protuberance at the centre, with a shallow vertical groove at one side, possibly to give verisimilitude (Fig. 2). It is carved round the base with elephants, which at Dimāpūr appear only on the forked stones, and in the west side of it a rough hole has been hacked, obviously after the completion of the pillar and by some very unskilled labour, possibly to make a receptacle for offerings or perhaps even a lamp. The hole is clearly no part of the original design, and has entailed the obliteration of part of the carving, which is, however, in any case not so elaborate in detail as that at Dimāpūr² (Pl. IX, Fig. 3).

With regard to the plan of the Jāmūgūrī site, it is difficult to say anything very definite, as the jungle all round is so thick, and the ground so uneven, that there may be other undetected stones. On the face of it, however, there would seem to have been a single or possibly a double row of erect carved slabs, showing about 8 to 10 feet above ground, and a single carved cylindrical stone (about 11 feet or more above ground) at a slight distance from the slabs, and possibly corresponding to the great solitary pillar at Dimāpūr. Including those face-downwards on the ground, there are some twenty carved slabs, a few fragments, two square pillars with cavities in the top, and one round monolith. If the slabs were erected in a single row, they would resemble in arrangement rather the alignments still erected in the Lhota Naga villages in the hills immediately east of Jāmūgūrī, than the Angāmi Naga arrangements, which, while usually in pairs, sometimes take the form of a double row of pairs, as at Dimāpūr; for I recently noticed twenty stones, long ago erected outside Chazubāma,³ which were arranged in four rows of five, the rows and the individual

¹ *Journ. Roy. Anthropol. Inst.*, loc. cit.

² Godwin-Austen, *J.A.S.B.*, loc. cit., gives a full account of the carvings with illustrations, but it should, perhaps, be pointed out that his assumption that the stones supported a roof is certainly mistaken, though repeated by Dr. Bloch in his account of Dimāpūr (*Annual Report of the Archaeological Survey, Bengal Circle*, for the year ending April, 1903). I still think that it is more likely that the apparent mortices are hollows for the reception of libations of liquor, oil, fat, or blood [cf., Fryer, *On the Khyeng (Chin) People of Arakan*, *J.A.S.B.* I, 1875], and would add that one of the round monoliths, in the group in which there are no Y-shaped stones, has a round hole in the top, presumably for the same purpose as the square ones at the ends of the Y arms, while the two square pillars at Jāmūgūrī have the whole of the top hollowed into a basin. Another explanation has been suggested to me by Mr. J. P. Mills, who has seen, at Ungnia village in the Ao Naga country, wooden Y's with the ends of the arms carved into wooden hornbills' feathers, and suggests that the holes at the ends of the arms of the Dimāpūr Y stones served to accommodate similar wooden carvings. It has hence occurred to me that the mortices in the Dimāpūr monoliths were possibly for the addition of wooden horns, or perhaps an arc, to make the top of the Y into a mere or less complete oval. Two of the older round pillars have what seems to be tenons where the others have the mushroom-like top; possibly this tenon held on a wooden dome. Cf., *Journ. Roy. Anthropol. Inst.*, loc. cit.

³ An Eastern Angāmi (*Chakrima*) village.

stones in the rows being equidistant from each other, and the higher stones at the middle and the back, as at Dīmāpūr again.¹ The apparent erection of a single solitary stone at a distance from the main body has perhaps a counterpart in the practice of one or two Sema villages which, when erecting a circle of slabs (*athegico*)² to the memory of a rich man, place a solitary upright stone at a little distance from the circle (Pl. XII, Fig. 2). In any case, we may be pretty sure that the Naga custom of erecting monoliths is intimately connected with the culture of the former inhabitants of the valley of the Dhānsiri and its tributary the Dāyāng; and that the Mānipūris, who include in their Hindu and Meithei-speaking population, both in the Mānipūr valley, but more particularly among the emigrants from that place to Cachar and Sylhet, a considerable proportion of persons whose household language, *Mayāng*, is more closely related to Assamese and Sylheti than to Meithei,³ have also been affected by the same influence, though it is possible that this might have been due to the influence of Mānipūris, sold as slaves in numbers by the Burmese to the Angāmis, and by them to the Kachāris at Dīmāpūr, and ultimately redeemed and returned to Mānipūr.⁴

So far I have spoken of the tribe that erected these monoliths as Kachāri, but the Bodo race, of which the Kachāris are perhaps the principal representatives, has been held to be a branch of the Mon-Khmer race and an amalgamation of "Australo-Dravidians" and "Eastern Tibetans or Western Chinese,"⁵ of which amalgamation

¹ Dr. Bloch, *loc. cit.*, p. 21, points out that the pillars of the front row correspond in place to the Y-shaped monoliths of the third row, while the pillars of the second row correspond to the Y's of the fourth row, and to the middle points of the spaces between the stones of the first and third rows. This, however, is true only of the northern half of the four rows, the monoliths in the southern half appearing to be in lines of fours from back to front, as in the Angāmi stones at Chazubāma. The Jāmūgūrī stones suggest an arrangement such as that described by Dr. Bloch, begun but not completed. To the south of the mound shown on the plan (Fig. 1) the stones are so disturbed as to make it difficult to guess at what their arrangement may have been.

² See *The Sema Nagas*, p. 246.

³ Grierson, *Linguistic Survey of India*, Pt. I, vol. v, p. 419. It may also be noted that the Mānipūris preserve the frontal bones of their dead to be thrown into the Ganges (Hodson, *op. cit.*, p. 117). Another river may have served their purpose before they became Hindus, as probably in the case of the Barman Kachāris, who, as representing the semi-Hinduized aristocracy of the Kachāri court at Kānpūr, also threw, or throw, the frontal bone into the Ganges (Soppitt, *op. cit.*, p. 42).

⁴ Soppitt, *op. cit.*, p. 48.

⁵ Peal, "On some Traces of the Kol-Mon-Anam in the Eastern Naga Hills," *J.A.S.B.*, No. 1 of 1896, p. 21. Cf. Dixon, "The Khasi and the Racial History of Assam," *Man in India*, vol. ii, Nos. 1 and 2, 1922. A trace of this mixed origin is probably to be seen in the use of two different words for "mother," viz., *ayo* and *mai*, and their variants, by Bodo or allied tribes within the same linguistic group, e.g. Mech Kachāri; *ai*, own mother; *bi-ma*, other person's mother; Lalung, Dimasā, and Hojai Kachāris use *ma*. So among Garos the Atong use *jou* = mother; other branches, *ma*. Bhojpuris (Shahabad) use *mai* and *ayo*; the Nagpuris word is *ayo*, as in one division of the Ao and also the Lhota Nagas; vide Grierson, *Linguistic Survey of India*.

the Munda tribes of Chota Nagpur are held to be another branch. Now, though most of the megalithic erections of the Chota Nagpur tribes seem to be in the form of erect slabs and dolmens of rough stone like those of the Khasis in Assam, who also speak a Mon-Khmer language, bulbous-headed carved stones, put up apparently by Mundas, have been found near Lohardaga in Chota Nagpur, which are decidedly reminiscent of the Dīmāpūr and Jāmūgūrī cylindrical type, although they cannot be said to resemble them precisely¹ (Fig. 3). Now, as with the Khasia monoliths, these Mundari stones appear to be monumental, and there is no connection immediately apparent between stones set up to perpetuate the memory of the dead, and stones erected to assist the fertilizing functions of Nature, as I have shown, I think, was



FIG. 3.—TYPE OF CARVED MONUMENTAL STONE NEAR RAJFUR, LOHARDAGA, CHOTA NAGPUR
(*L. ASIATIC S.O. BENGAL, PART I, 1873, PL. II*)

probably the case with those at Dīmāpūr,² and therefore also at Jāmūgūrī. If, however, the souls of the dead are themselves identified or confused with the reproductive powers of Nature, the connection becomes clear enough. To perpetuate the memory of the dead and to aid Nature to reproduce the various species of animals and plants becomes the same thing. Of such an identification or confusion having often taken place, there is, I think, evidence enough to justify a conclusion that the phallic stones of the Dhānsirī valley, and of the Naga hills, belong to the same culture as the monumental stones of the Khasi and the Munda.

¹ Dalton, "Rude Stone Monuments in Chutia Nagpur," *J.A.S.B.*, No. 2 of 1873 plate II.

² *Journ. Roy. Anthropol. Inst.*, 1922, *loc. cit.*; also *Meaning and Method of the Erection of Monoliths by the Naga Tribes*, ditto vol. lii, 1922.

Sir James Frazer mentions instances of the association of the dead with the reproductive powers of Nature from Africa,¹ from New Guinea,² and from Europe, where the propitiation of the corn-spirit was fused with the worship of the dead in the cult of Adonis.³ In the Assam area, the Kukis are reported to offer the first-fruits of their crops on the tomb of a deceased relative for a year after his burial;⁴ the Southern Sāngtāms, like the Kukis, offer quantities of grain, etc., during the year of decease; and it is possibly not without significance that the Kachin death-dance includes a complete pantomime of agricultural operations.⁵ The Mundas of Chota Nagpur have a bone-burial ceremony for those who have died during the preceding year, and this ceremony takes place "after the winter rice is harvested," and is accompanied by the building of a stone dolmen.⁶ In Cambodia, another Mon-Khmer area, the Cham tribe bury their dead close to the best rice-fields of the family.⁷ To turn back to Assam again, it has already been mentioned that the Kachāris throw the frontal bone into water at the harvest festival;⁸ many Angāmis, e.g. Khonoma, erect the memorial stones for their dead in their terraced rice fields; the Angāmis of Kohima produce rain by a more or less magical ceremony on the grave of the most recently deceased members of a particular family,⁹ and there is also a grave in the Chakrima Angāmi village of Theniazumi on which water is poured to produce rain, or from which grass is pulled up to stop it. The Kōnyāk Nagas have a ceremony (*Pungan*), performed apparently by rich men who reap a specially prolific harvest from their fields, in which the spirits of the family ancestors are called to the granary from the original village of their founder, and from the villages subsequently occupied by them, while the front and back posts which support the granary roof-tree are spoken of as male and female respectively.¹⁰ The Ao Nagas¹⁰ sometimes save up their smoke-dried dead to be exposed in the village cemetery at the harvest following the death, and it should be added that it is only the rich Ao who is sufficiently smoked to make such a proceeding possible. But the most significant of all such customs in the Naga hills is that of the Kālyo-Kengyu of Karāmi, who preserve all their dead in their houses until the first day of the "genna," which inaugurates the next sowing

¹ *Golden Bough* (3rd edn.), vol. vi, p. 175 sq.

² *Ibid.*, vii, pp. 104, 228.

³ *Ibid.*, v., p. 233 sqq.

⁴ Lewin, *Wild Races of South-Eastern India*, p. 280 (quoting from Rennel). They also erect small stones after a particularly good harvest, and the explanation I was given was that if a stone was not put up "the spirits (*Cha*) were not good."

⁵ Hanson, *The Kachins*, p. 203.

⁶ S. C. Roy, *The Mundas and their Country*, pp. 465, 466.

⁷ Baudesson, *Indo-China and its Primitive People*, p. 314.

⁸ Soppitt, *op. cit.*, p. 40.

⁹ See *The Angāmi Nagas*, p. 237.

¹⁰ For these observations on Kōnyāk and Ao custom I am indebted respectively to Messrs. H. G. Dennehy and J. P. Mills, of Mokokchung.

of the rice after the deaths have taken place. On this day the bodies of all the inhabitants of the village who have died since the sowing genna of the preceding year are brought out and broken up, the flesh being thrown away with the boat-like coffin, and the bones, carefully collected and counted, being placed in the family granary for good. Add to this that the Sema stone memorials (*athegwo*) are only erected to the rich, *i.e.* to those whose crops and cattle have been particularly fruitful, and it may be fairly argued that the erection of stones to perpetuate the memory of the dead cannot be distinguished by any clear line of demarcation from the erection of stones to promote the prosperity of the living. If so, it is the Dhānsiri valley, a remote corner of Assam cut off by the Naga and the Mikir hills from the outside world, that the monolithic culture, seen in a rude form among the Nagas, the Khasis, and the Mundas, reached its fullest and most elaborate development, possibly withstanding the influence of Hinduism till it was overwhelmed by the Ahom invasion.

I merely put forward this view of the erection of monolithic memorials as a tentative proposition, and it is a far cry from Assam to the west of Europe, but if the theory be logically applied, one cannot help wondering whether the ogham stones and cromlechs¹ of our ancestors originally had similar associations.² Old-established practices often die harder than the beliefs that gave them birth, and a gradual development from magical to theistic religious ideas would probably in itself be enough to convert the monolithic aids to fertilization into monuments to the memory of the dead ancestors, whose functions of causing the crops to bear and the cattle to breed had been taken over by a god, himself, perhaps, originally but one of them. Contact with, and still more partial conquest by, a superior race with a

¹ I have pointed out in a previous paper (*Journ. Roy. Anthropol. Inst.*, vol. lii, p. 243) that among the Kacha Nagas dolmens appear to represent the female principle, the male being represented by an erect stone; among the Khasis, too, an upright stone seems to be used as the memorial of the male, and a recumbent slab as that of the female. As regards menhirs, Gomme (*Ethnology in Folklore*, pp. 32-34) mentions a granite pillar 6 or 7 feet high at Helne on Dartmoor, to which a lamb was tied and sacrificed on May-day. This rite he associated with a struggle for pieces of flesh, originally raw, "at the risk of cut hands," with the idea of sacred power attaching to pieces of the flesh, and with that of a sacrifice to the "god of waters"; he quotes as a parallel a bull sacrifice described by Miss Burne in *Shropshire Folklore* (p. 475). The parallel here to Naga customs is exceedingly close. May-day in England is closely associated with fertility rites, as is the harvest in the Naga hills. The rites at the latter are frequently accompanied by the sacrifice of a bull, which is torn to pieces alive by the Angāmis (*Journ. Roy. Anthropol. Inst.*, vol. lii, p. 69), and by the Phōms, for instance, is hacked to pieces alive with daos, to the great risk of all participating and the certain hurt of some; the pieces of flesh are much prized, particularly the liver; finally the victim at such sacrifices is normally tied to a post of phallic design, Y-shaped or cylindrical (*Journ. Roy. Anthropol. Inst.*, *loc. cit.*). The association of the Kachāri monoliths with running water has already been mentioned. Fryer (*J.A.S.B.*, *loc. cit.*) gives another instance in point.

² It is, perhaps, worth mentioning that the baetylic stones figured by Prof. Macalister in his *Ireland in Pre-Celtic Times* might be the precious collection of any Naga. I have just such an assortment from a Konyak granary in front of me.

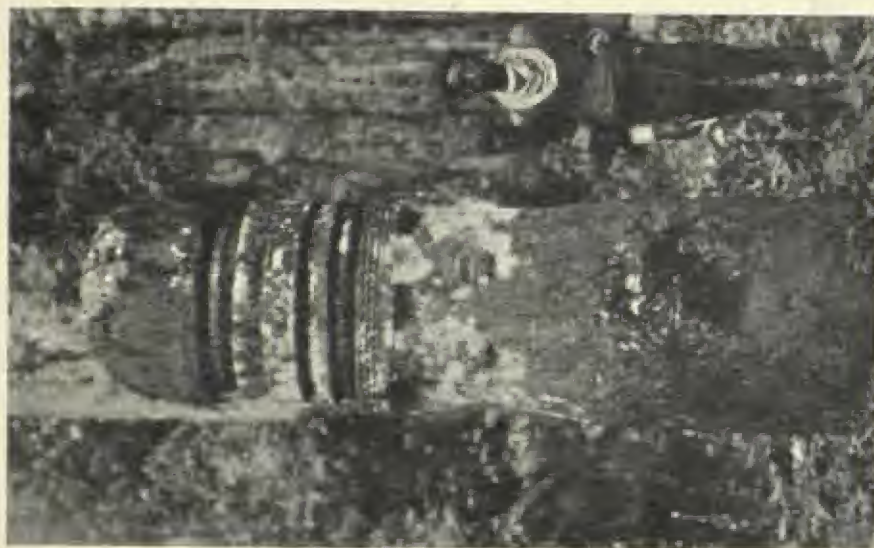


FIG. 3.—THE ROUND PILLAR FROM THE WEST,
SHOWING CAVITY MADE SUBSEQUENTLY.

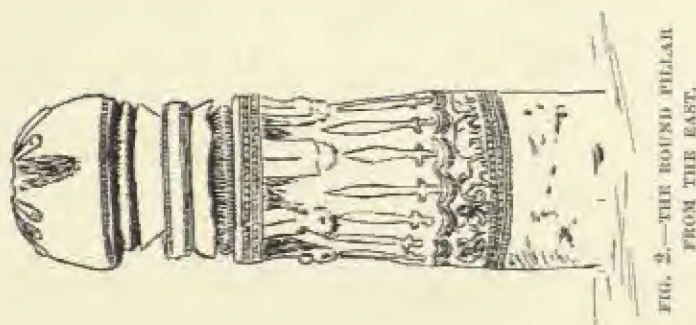


FIG. 2.—THE ROUND PILLAR
FROM THE EAST.



FIG. 1.—THE ROUND PILLAR FROM THE EAST.



FIG. 3.—CARVED SLAB, D ON PLAN.

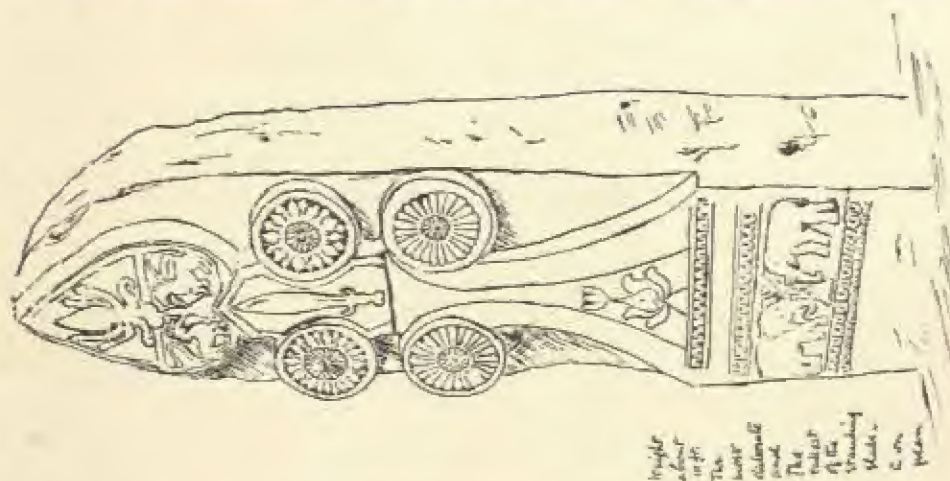


FIG. 2.—CARVED SLAB, C ON PLAN.



FIG. 1.—CARVED SLAB, C ON PLAN.



FIG. 1.—CARVED SLAB, I ON PLAN.



FIG. 2.—THE MANIPUR STONE, ERECTED 1833.

CARVED MONOLITHS AT JĀMŪGŪRĪ IN ASSAM.



FIG. 1.—AN ALIGNMENT OF TWO ROWS OF MONOLITHS IN A LHOTA VILLAGE (MŌR\KCHŌ), WITH A WOODEN Y POST IN FRONT.



FIG. 2.—*Athegewo* IN A SEMA VILLAGE (YĒSHŪLOTŌMI), WITH SOLITARY STONE STANDING ON THE RIGHT.

CARVED MONOLITHS AT JĀMŪGŪRĪ IN ASSAM.

theistic religion already developed might bring about such a change in a comparatively short period; the former, if not both of these, appears to have befallen the Mundas and the Khasis, while the Angāmi Nagas appear to be now in the actual process of substituting the monumental for the magical ideas associated with their monoliths.¹ There seems to be no inherent reason why the rude stone monuments of our own islands should not have had a similar history. Cromlechs, indeed, are still the beds of Gráinné and Diarmuid—Venus and Adonis, the dying god; dolmens in form, the stone altars of many a saint, whose ruined shrine marks the haunt of some pagan deity of ancient Donegal, are still called "beds"; and it might be that not only our altars, but the grave-stones of our churchyards are the lineal representatives of stones put up by our forbears to aid the posthumous efforts of their dead, "made one with Nature," to fertilize the earth and give increase to their offspring.

NOTE.—Since writing the above, I have had access to Dr. Bloch's note on the Jāmūgūrī stones in the *Annual Report of the Archaeological Survey, Bengal Circle*, for the year ending 1905.

Dr. Bloch found the single "chessman" pillar and twenty-four carved slabs, of which four were still erect, another having probably fallen since then. He gives the approximate distance between the slabs as 10 feet, and the height of those then erect as 6 feet 5 inches, 8 feet, 9 feet 4 inches, 8 feet 6 inches; and that of the cylindrical monolith as 9 feet. In the latter case some of the earth at the base must have since been removed, as the Lhota Naga standing by the pillar in my photograph is a tall man for his tribe, and cannot be less than 5 feet 6 inches in height. Dr. Bloch describes the small square pillar as 3 feet 8½ inches high and 1 foot 4 inches broad, having a hollow in the top 7½ inches square. He gives the average breadth of the erect slabs as 2 feet 6 inches, and observes that they are slightly narrower towards the base than higher up.

In the same Report Dr. Bloch withdraws his view that the Y stones at Dīmāpūr supported a roof, and quotes an observation made by Sir Bamfylde Fuller on the resemblance between the stones at Dīmāpūr and certain Sema U-shaped posts, though it is incorrect to state that the Sema posts always face east. Dr. Bloch also observes that the "spear-head" design "closely resembles the Naga knife." There is no Naga knife of this type at all.

¹ Cf. Shakespear, *Tangkhul Folk Tales, etc.*, in *Folklore*, xxxiii, No. 3, p. 279 (Sept., 1922); Hodson, *Primitive Culture of India*, p. 105; *Naga Tribes of Mānipūr*, pp. 188, 190, 191.

THE EVIL EYE IN SOME GREEK VILLAGES OF THE UPPER HALIAKMON VALLEY IN WEST MACEDONIA.

By MARGARET M. HARDIE (MRS. F. W. HASLUCK).

[WITH PLATE XIII.]

§ 1.—INTRODUCTORY.

To the investigator of Greek folklore no superstition is so useful as the all prevailing belief in the evil eye (*βασκανία*). Greeks, both men and women, readily admit its existence and their own fear of it, for it is abundantly warranted by scripture, in particular by Solomon, notorious as an authority on magic.¹ The investigator can therefore arrive in a village and at once, without danger of being baffled by shyness, suspicion, or stupidity, ask who suffers from overlooking. A little adroit playing on the belief that the more attractive a person is, the more he must fear the evil eye, will work wonders in the way of establishing sympathy between the investigator and the villagers. Otherwise much time may have to be wasted in trivialities in order to establish this essential sympathy. Questions on such a subject also instruct the villagers in the burning topic of the investigator's business and save annoyance from the ignorant suspicions which arise so easily in a Macedonian mind. Further, they frequently discuss it among themselves and are primed with numerous stories of its manifestations and cure. This familiarity of theirs with the subject enables the investigator, as they pour out their information, to instil into their minds ideas of orderly presentation of their knowledge and of clear enunciation in speaking. In dealing with a topic so safe and so familiar there is no risk of losing information by administering this necessary and useful training.

§ 2.—NATURE AND PREVENTION.

Overlooking may be voluntary or involuntary. The former is produced by spreading all the fingers wide and moving the hand, palm downward, with a quick, slanting gesture towards the person to be cursed; one or both hands may be used. But this type is in practice little more than a jest, the known consequences of overlooking being too serious for a person to burden himself lightly with them. It is rather the involuntary variety which is the object of Macedonian fears and the subject of my paper.

In the Upper Haliakmon valley it is not known who has the evil eye. Blue eyes and meeting eyebrows inspire none of the fear they do in Old Greece,

¹ The references are collected by Elworthy, *Evil Eye*, note 7A.

presumably because blue eyes are portentously rare in Old Greece and frequent in every Macedonian village, where 30 per cent. of the population is blue-eyed according to my anthropological lists. It is known, however, that if a new-made mother suckles her infant from both breasts without an interval between, her glance will be baleful to the first thing on which it rests afterwards. Again, should a mother weakly yield to the tears of her newly weaned son and resume feeding him, he will, in later life, have the evil eye.

Those who are found by experience to have the evil eye seem to take a regretful pride in its possession. The horse-and-rider story told me in every village with local *dramatis personæ* is typical. According to this, a villager claims to have such power; and, to convince his rather sceptical friends, expresses admiration of a stranger who happens to ride by at that particular moment; the stranger inevitably falls. Or it may be that a stranger casts doubt on the reputed skill of a villager; the latter's friends summon him to prove it at the expense of the stranger as he leaves, and the result is a triumphant vindication of the villager's claims.

Overlooking is known to be seldom due to spite, and no rancour is cherished against a person who has the unfortunate gift. He (or she) is simply avoided for the future. It is advisable to turn back and make a fresh start if you meet such a person going to your work in the morning.

It is difficult to say what attracts the evil eye. Beauty is, of course, a great danger to its owner, but any one, young or old, ugly or beautiful, may be attacked. Only those born on a Saturday are exempt, but on Saturday afternoon, be it understood; for it was on Saturday afternoon that Christ was born, and it is from Christ that the Saturday-born derive their exemption. New-made mothers have much to fear from it until their purification, forty days after the birth of their child. Beasts and inanimate objects suffer no less than men; young children suffer most of all, although infants are safe until they are baptized or their mother celebrates her purification, I think, because the infant is scarcely regarded as an entity until those events take place.

Any illness which is obviously not due to organic disease, a breakage, or a chill, is set down to the evil eye. The ordinary symptoms are discomfort, headache, whining, sleeplessness, and peevishness. Usually the trouble yields to one or other of the remedies given below, but sometimes it is severe enough to bring death within forty days. An extreme case was that of an infant of Kastoria (the ancient *Keletron*), which was taken to visit its grandmother when two months old. Its swaddling bands had just been undone when a neighbour called. She admired the fine child, with the result that it fell ill at once, and in spite of every conceivable remedy being tried it died in twenty-four hours.

Prevention, even in Macedonia, is thought better than cure, so amulets (*Βασκαντοῦρες*) are generally worn to keep the evil eye at bay. Adults often have a cross or sacred picture or piece of incense concealed about their person.

New-made mothers have a variety of prophylactics under their pillow or on their head, such as a red string, incense, bread, salt, garlic, indigo blue, a nail, gunpowder, a black and white thread, a ring, a pair of silver buckles. The ring and the silver buckles divert the visitor's attention to themselves, silver having in itself an additional power over evil magic, as in our own silver bullet. The black and white thread I do not understand: I have found it again in a prophylactic spell said over a new-made mother by a Vlach woman. Gunpowder is a potent killer of men, so may reasonably be expected to destroy any evil eye that glances at the mother. A nail is the symbol of strength and will occur in a spell I give later on (No. 1). The power of the indigo rests presumably in the intensity of its blue. Garlic has recognizedly caustic properties (τὸ σκόρδο εἶνε κανστικὸν). Salt strengthens and preserves. Red is in some obscure way potent because it is the colour of Christ's blood. Bread because of its use in the communion mass has a well-known religious significance: the bread which has been used during morning service in the church of Our Lady Made Manifest (Παναγία Φανερωμένη), of Kastoria, has a great reputation as an amulet in such cases.

Children wear round their necks a cross or a picture of Christ or the Virgin, but they may discard their amulet in Kastoria when three years old. An infant may wear on its bonnet a clove of garlic, a few white beads, a cheap pearl cross, a scrap of coral, or the gold (gilded) coin known as a *flouri*.

A remarkable necklace was worn by a Bogatsko baby. The foundation was of alternate blue, white, and silver beads, all alleged to be without prophylactic value. At intervals were suspended a vulture's claw set in silver, a roughly shaped lapis lazuli bead, a small packet of alum, a picture of St. Stylianos, a cross, and a packet containing a snail inside a walnut shell. The claw is a very favourite child's amulet among all creeds and languages of Macedonia. The power of the snail I do not understand; the alum presumably derives its efficacy from its well-known fixing properties in dyeing. St. Stylianos—whether his name is derived from *στέλος*, a column, or from *στηρίζω*, I support, according to the Macedonian pronunciation, Styrianos—is a well-known patron of weakly children. The lapis lazuli bead's colour is effective, but, in addition, the bead has been found useful in preventing mis-carriages, and is hence called *σταματοπέτρα* ("stopping-stone"). I therefore now think it probable that several elder brothers and sisters of the infant had died, presumably from overlooking, so the mother hung St. Stylianos and the "stopping-stone" on this child in the hope of "stopping" the sequence of deaths, but I have not yet returned to Bogatsko to inquire.

Shops have a horseshoe or a clove of garlic suspended over the door. A Shatista man has particular confidence in a French horseshoe he picked up during the war; it is, of course, twice the size of an ordinary Macedonian shoe. Calves wear necklaces of bright wool tassels, as does even a young donkey of my acquaintance—adult donkeys, as is known, are unworthy even of being overlooked. Horses

wear a tuft of badger's hair on the forehead, but never the blue bead necklaces so familiar to the tourists of Athens and Smyrna.

The spoken word may also effectively ward off the dreaded evil. As is well known, the pale skins of North Europeans are much admired by the dark-complexioned children of the South. As a result, on my removing my glove one day in Shatista, a woman screamed "Garlic!" and kissed my hand, exclaiming, "It is as white as a saint's." Another in Kastoria remarked that I was "milky-white" (by no means true), whereupon her friend turned up the hem of my dress and exclaimed *ἔχει ἀστὴρ τὸ φουστάνι της* ("Her skirt has a lining"), meaning, I suppose, that I had also defects.

I have so far found no Greek prophylactic spell said over a new-made mother, though I have no doubt that such spells exist, like the Vlach one I have mentioned above. To protect an infant, undo his swaddling bands and pass the hand upwards to the crown of his head and down again over the trunk, saying, "If his *puenda* are evil eyed, then may his face be evil eyed!" (*θὰ πάρη ἡ φύσι του ἀπὸ μάτι, τότε καὶ πάρη ἡ μούτρα του ἀπὸ μάτι*). The spell is from Shatista.

In these prophylactic measures two principles are discernible. The pictures of the saints, the cross, the incense, and the bread make a direct appeal to religion for preservation, while such amulets as beads, garlic, horseshoes, and badger's hair belong to a lower level, to secular rather than to religious magic, according to a distinction made by my husband and elaborated by him in his forthcoming book, *Transferences from Christianity to Islam*. Apart from the confidence they give—it will be noted in how many there is a suggestion of power and permanence and stability—their main purpose is apparently to divert to themselves the attention of any possible overlooker. Thus, a Kastoria small boy, who was frequently overlooked, was never allowed by his mother to leave the house until she had daubed some coffee grounds on his cheek, in order that the first remark made on him by passers-by might be a comment on his dirty face, i.e. on something extraneous to his personality. Similarly, in the village of Serbia, South of Kozani, women for a similar reason dye small spots on their cheek—but here I suspect that the ladies are quite aware of how these "patches" enhance their charms. Another small boy of Kastoria habitually wore stockings that were not a pair, or, if they matched, one was outside in. An incautious person admired a string of twelve horses he saw one day: at once the bells on the two foremost horses shivered into a thousand pieces—but the horses themselves remained unhurt, the bells having attracted all the evil to themselves. The amulets, in short, are a species of lightning conductor, just as the power of overlooking is thought popularly to be a kind of electricity which resides in the eye.

§ 3.—REMEDIES FOR THE EVIL EYE.

Sometimes, however, all preventive measures prove in vain, and the evil eye has fallen on some one. Recourse is then had to various well-tried remedies. A

woman of Kastoria, who is noted for her magic touch, takes a thread from the patient's clothes, mutters a spell, and heals the patient. A Greek gipsy in the same town (Pl. XIII, Fig. 4) massages the patient's forehead and presses upwards his eyebrows. In Bogatsko bear's hair is burned, and the child held in the fumes, a curious remedy which is based on a still more curious custom. In autumn, dancing bears are led round the villages, and not only entertain the villagers but also walk over the bodies of sick men, women, and children to cure them, much as do the dervishes of Constantinople. Mothers make a point of buying some hair from the bear to store against future need.

Like their amulets, their remedies for overlooking fall into the two categories of religious and secular magic. Of the religious the most obvious is summoning a priest to read a prayer over the sufferer; in his service book he finds one ready to hand called "A Prayer for Overlooking" (Εὐχὴ εἰς βασκανίαν). If an animal has been evil-eyed, a cross made of pitch may be hung round its neck, pitch being used in both white and black magic because of its supposed presence in the nether regions. A horse fell sick once at Kastoria and was unable to rise. Its owner and his friends by main force dragged it to its feet, and then beat it three times round the church of Our Lady Made Manifest; the horse was immediately visibly better, and next day they loaded it for a successful journey to Shatista, ten hours away.

The most prominent church at Shatista is that of St. Menas, the finder. Hanging on his *eikon* in the church is a big silver model of an eye, with which a cross is signed over an animal ill of overlooking; failing to cure is, I am told, unknown.

Similarly, a little oil may be taken from the sacred lamps in a church and placed in water in three plates. If the child has been overlooked, the oil mingles with the water, otherwise not. Apparently nothing more is necessary to cure the child.

A famous religious remedy is the *μονόκερο*. This is one of the small crosses with equilateral limbs which the monks of Athos carve with a figure of Christ and sell all over the Levant. It is reported to be made of the horn of an animal which has only one, *μονόκερο* signifying literally "unicorn." Mr. G. F. Abbott accepts this derivation and explanation,¹ and it is certainly true that most of the *μονόκερα* now sold are made of horn. But the monumental *Greek Dictionary*, which is in process of compilation, is sceptical of both explanation and derivation; rightly I think, for I note that the older *μονόκερα* in Macedonia are carved wooden crosses set in silver, and not made of horn at all. In addition, three times out of seven I hear the word pronounced *monokyro* (*μονόκυρο*), such confusion of *y* and short *e* being frequent in popular Macedonian pronunciation. I would, therefore, suggest that the older form is *μονόκυρο*—the word seems known only in Macedonia and Thrace, and not to have reached Old Greece. The meaning would then be *μόνος ὁ Κύριος* ("The Lord alone [cureth]"), an explanation I was, as a matter of fact, offered by a native of Velvendo near Serbia.

¹ See his *Macedonian Folklore*, p. 142.

Be the meaning of the word what it may, the *μονόκερο* is much employed to cure overlooking. An old woman takes a glass of fresh water, and with the *μονόκερο* in her hand signs the cross three times across the water, whereupon she plunges the *μονόκερο* into the water. If bubbles rise to the surface of the water, as they usually seem to do, the patient is certainly suffering from overlooking but will now recover without more ado; plunging the *μονόκερο* into water being both for diagnosis and cure.

§ 4.—CURATIVE SPELLS FOR THE EVIL EYE.

It is never difficult to learn the religious remedies for overlooking, but spells are more difficult to obtain. For one thing, the old women who know them earn a few pence by them, and are naturally unwilling to divulge their secrets to a possible rival, a scientific reason for their acquisition being neither understood nor believed; only when old enough to "retire from business," do they communicate them to a younger woman. Some are afraid that imparting their knowledge will bring their own death, though exception may be safely made in favour of the eldest born of a family, a condition I am fortunate enough to fulfil. There is also a general belief that the spell acts for only one person at a time; when the "wise woman" is, as often, a harassed mother who soothes her peevish child to sleep by her spell, it is a serious matter to surrender her power. Fortunately, the words must be *spoken* either to act or to break the spell, so that women who can write can usually be persuaded into writing down the words. There is no difficulty about learning the ritual part of the spell. I have nowhere in Macedonia found, as I did in the island of Keos, that the spells may be told by a woman only to a man and *vice versa*.

The *bona fides* of my informants may be suspected. Unnecessarily, I think. Apart from the character of the spells themselves, which conform to the usual rules of magical procedure, the circumstances in which I obtained No. 7 renders its forgery impossible. Its narrator is a young girl of Bogatsko, to whose father's house I was unexpectedly taken on my first morning in that village. She was very willing to go through the ritual part with me, but extremely reluctant to communicate the words in case she broke the spell, which she used every night to send her nephew to sleep. Finally, after banishing all her relatives from the room, she produced a well-thumbed piece of paper on which she had written down the words as dictated by the old woman who had taught her the exorcism. She wrote them down in my notebook from this piece of paper, but pulled me up short when I inadvertently repeated aloud one of the sentences. She had no time to concoct and write down the words, and her terror of breaking the charm was painfully real. As several of the others are apparently broken down versions of this one, it is of some importance to have established its genuine character.

The charms I have so far collected are as follows :—

(1) From Kastoria :

If a visitor has overlooked a child, take three nails, three live coals, and three splinters from the door by which the visitor left. Put them in a shovel and hold the shovel a few minutes in the fire. Then lay the child on the ground, pour a little water on the shovel, and let the resultant smoke envelope the child. If the nails leap about in the shovel, the trouble is due to the visitor's evil eye. Finally, give the child a little water to drink from the shovel and its crying will cease.

It is scarcely to be doubted that the woman says a spell (*λόγια*), but my informant, being a man, did not know it.

(2) From Kostaradja above Bogatsko :

A woman takes a dish of water and makes a cross over it. She then drops a live coal into the water. As it falls to the bottom, it takes the evil eye with it. She next signs the cross three times over the water and then takes a little dust from the coal, sprinkles salt on it, and rubs the sufferer's head with the mixed coal and salt. She concludes by throwing three pinches of salt into the fire to banish the evil eye.

Here again the woman doubtless says a spell.

(3) From Bogatsko :

A "wise woman" is summoned. She first says forty "*πατερημοί*," which apparently means saying the words "Our Father" (*πάτερ ἡμῶν*) forty times. Then she takes a glass of water which has been newly fetched, in silence (*νερὸ ἀσμπόροστο*), from three fountains. Into it she drops five coals in succession, repeating for each the following "narrative charm":—

Γένισε ἡ γελάδα ἓνα μουσχάρι.
Γλίσφοντας ἡ μάνα μὲ τὸ σάλ τὸ ξεβάσκαρεν.
Γλίσφοντας καὶ ἔγω ἡ μάνα τὸ ξεβάσκαρεν.
Νὰ ζήσῃ στὸν κόσμον καλὰ, νὰ μὴ παθῇ τίποτε.

*The cow gave birth to a calf.
Its mother, licking it, undid the evil spell with her spittle,
And I, the mother, have undone the evil spell by licking.
May the child live and prosper and not suffer any harm!*

This said and done, the woman gives three pinches of salt to the patient and sprinkles water on his face. Any remaining water is to be thrown out at cross roads. The old woman is given a penny for her pains, but tramples it under foot before pocketing it in case it should have been infected by the patient's trouble.

(4) From Sarakina, 12 hours south of Shatista :

Take three live coals and a glass of fresh water. Sign the cross with each coal across the water and plunge it in after saying:—

Διάρη γελάδα,
 Λιάρη μοςχάρη,
 πάει στὸ μπαζάρ καὶ δὲν βασκύθηκε.
 Ἔτσι νὰ μὴ βασκαθῇ καὶ τὸ μικρό.

*Dappled cow,
 Dappled calf,
 Went to market and was not evil-eyed.
 Thus may the child not be evil-eyed !*

This and the foregoing spell are evidently related. I hope later to give elsewhere a fuller version which I obtained from the Greek-speaking Moslems of the same area.

(5) From Kastoria :

Break a live coal into three pieces. Take three pinches of salt, give one to the child, throw a second over your shoulder, and cast a third into the fire. Then sign the cross, saying *Χριστὸς καὶ Παναγία* ("O Christ and the Virgin"), and drop the first fragment of coal into a glass of fresh water. Pick up the second fragment, saying *νὰ σκάσουν τὰ κακὰ τὰ μάτια* ("Down with evil eyes"); and drop it into the water. Drop the third fragment in. Then give the child three sips of the water to drink and three times touch its forehead with the water, saying:—

Νίβγω τὰ κακὰ τὰ μάτια
 καὶ τὰ ἀποφθεμάγματα
 καὶ αἱ κακὲς τῆς ὥρας.

*I am washing away evil eyes
 and curses
 and evil days.*

Then with the open hand sprinkle the child eight times with the water, your five fingers multiplied by eight making the magic number forty. Any water left is to be thrown out into the street, the usual repository of rubbish in Macedonia.

My informant's ten months old child is reported to require this treatment every night before it can go to sleep.

Several poorer versions of this spell have been given me elsewhere, and at Kastoria itself.

It may be noted that the lady's Greek is not above reproach, the syntax of the last line being dubious, and *ἀποφθεμάγματα* apparently a Mrs. Malaprop rendering of *ἀποφθέγματα*.

(6) From Kastoria :

Take a glass of water and three grains of salt. Make a cross three times with the salt across the water, saying each time, *εἰς τὸ ὄνομα τοῦ πατρὸς καὶ τοῦ υἱοῦ καὶ τοῦ ἁγίου πνεύματος* ("In the Name of the Father and the Son and the Holy Ghost").

Then throw one of the grains of salt into the fire, and the second into the water. With the third, sign the cross in front of the patient three times, afterwards putting it in his mouth.

Next pick up three live coals with the tongs. With each make a cross over the water and drop it into the glass, saying to the first and second, *εἰς τὸ ὄνομα τοῦ πατρὸς καὶ τοῦ υἱοῦ καὶ τοῦ ἁγίου πνεύματος*. To the third say, instead, *ὅποιος τηράει μὲ κακὸ μάτι, νὰ σκάσῃ τὸ μάτι του* ("Death to the eye of whoever has the evil eye"). If the coals do not sink to the bottom of the glass, the *malaise* is not due to overlooking ; if they do, it is. If all sink to the bottom, the overlooker is a man ; if only one sinks, the overlooker is a woman.

Now sprinkle the water on the patient with the open hand, the back being towards the patient and the fingers pointing downwards. Continue the sprinkling so long as it takes to mutter the creed (*τὸ "πιστεύω"*). After this give the patient three sips of the water and then wet his cheeks, forehead, and hands with it. Finally throw any that remains out of the window, but with averted face, saying, *ἔξω τὸ κακὸ, μέσα τὸ καλὸ* ("out with evil, in with good"). Turn the empty glass upside down and leave it so overnight.

This exorcism can be handed on only to the eldest born of a family, men as well as women being eligible to learn it if the first-born of their family.

(7) From Bogatsko :

Take a metal coffee-cup and make nine indentations in the ashes of a charcoal brazier (*μαργάλ*). Take a glass of water in the left hand and a black-handled knife in the right ; with the knife take a little ash from each of the nine marks, sign the cross with it over the water, saying, *Ἰησοῦς Χριστὸς νὰ νικήῃ τὰ κακὰ τοῦ τάδε* ("May Jesus Christ destroy the ills of So-and-So"), and let the ash fall into the water. Obliterate the nine indentations.

Now with the same knife draw a large cross in the ashes of the brazier, saying, *Ἰησοῦς Χριστὸς καὶ Ἀνάργυροι οἱ Θαυματουργοί, νὰ νικήῃ τὰ κακὰ τοῦ τάδε καὶ αὐτὰ τὰ κακὰ ἔργα τοῦ ἁρρώστου ὀπίσω νὰ γυρνοῦν*. ("May Jesus Christ and the Unfeet Saints [Cosmas and Damian] conquer the ills of So-and-So, and may the evils that have befallen the sick child go back the way they came"). Then take a little ash from the four arms of the cross and say, *Ἰησοῦς Χριστὸς νὰ νικήῃ τὰ κακὰ τοῦ τάδε*, as you drop it into the water. Obliterate the cross, saying, *Χαλῶ τὰ κακὰ μύτια, τὰ κακὰ ἔργα* ("I am blotting out evil eyes and evil deeds"). Three times altogether this large cross is to be made and obliterated.

Next, pick up three live coal from the brazier with the tongs, make a cross with each over the water, and let it fall into the water. Each coal represents one of the three possible sources of overlooking, viz., woman, man, or that vague thing, half ghost, half shadow, called *ἴσκιον*. On making the cross say, *Ἰησοῦς Χριστός*. On dropping in the first coal, which stands for women overlookers, say, *σβοῦν τὰ κάρβουνα, σβοῦν τὰ σίδηρα· νὰ σβοῦν καὶ τὰ κακὰ τοῦ τάδε· νὰ σκάσουν τὰ βυζιά της* ("The coals are quenched, the iron [tongs] is quenched, may the ills of So-and-So also be quenched. Destruction to her breasts"). As the second coal, representing men, is dropped in, say *σβοῦν τὰ κάρβουνα, σβοῦν τὰ σίδηρα· νὰ σβοῦν καὶ τὰ κακὰ τοῦ τάδε· νὰ σκάσουν τὰ κάτω του* ("The coals are quenched, the iron [tongs] is quenched, may the ills of So-and-So be quenched." As the third, representing the vague *ἴσκιον*, falls into the water, say only *σβοῦν τὰ κάρβουνα, σβοῦν τὰ σίδηρα· τὰ σβοῦν καὶ τὰ κακὰ τοῦ τάδε*.

If a coal sinks to the bottom of the glass, it reveals that the man, the woman, or the *ἴσκιον*, which it represents, overlooked the child.

After this take a pinch of salt and three times sign the cross before the patient's face, saying, *Ἰησοῦς Χριστός νὰ νικήν τὰ κακὰ τοῦ τάδε* (May Jesus Christ conquer the ills of So-and-So"), put a little of the salt in the child's mouth, and throw the remainder on the fire, saying, *ὅπως σκάξ τοῦ ἄλας, νὰ σκάξ καὶ τὸ κακὸ ἀπὸ τοῦ παιδι* ("As the salt 'bursts' so may the child's trouble 'burst'"). Take a second pinch of salt and forty times stroke the child's forehead with the inside of the thumb, with an upward slanting movement, saying, *σαράντα 1 πατερημοί, σαράντα 2 πατερημοί* up to *σαράντα 40 πατερημοί* (forty, 1, "Our Father": forty, 2, "Our Father": . . . : forty, 26, "Our Father": forty, 27, "Our Father": . . . : forty, 40, "Our Father"), that is, counting up to forty, at each number prefixing "forty" and adding "Our Father."

A third pinch of salt is now taken and the child's forehead stroked as before, while the operator counts backwards from forty.

Next dip your hand in the water and from close at hand sprinkle the patient, the back of the hand being kept towards him and the fingers pointing downwards. Sprinkle him three times, twice from right to left, and the third time from left to right, so as to begin and end on the right. Each time say, *νίβω τὰ κακὰ μάτια, τὰ κακὰ ἔργα* "I am washing away evil eyes and evil deeds").

Then sprinkle him from a distance three times, saying, *ἂν το ἔφερεν ἡ μέρα νὰ το πάρῃ ἡ νύχτα* ("If it came with the day, may it go with the night").

Wet your finger in the water and touch the child's lips with the words, *ἂν το ἔφερεν ἡ νύχτα, νὰ το πάρῃ ἡ μέρα* ("If it came with the night, may it go with the day"). Any water left in the glass is to be poured out into the gutter, while you say *πὼς τρέχ τὸ νερὸ ἀπὸ τὴν ἀστραχιά, νὰ τρέχῃ τὸ κακὸ ἀπὸ τὸ τάδε* ("As the water runs away in the gutter, so may the evil run away from So-and-So").

Conclude by turning the glass upside down (to prevent any remaining, I think).

It is throughout essential to say the patient's name.

(8) From Sarakina :

Take a glass of fresh water and three grains of salt. Drop them one by one into the water, saying, *κίνησε ὁ Σήλιος καὶ ἡ Σήλιανα νὰ παίεν στὰν ἔρμιά, στὰν ἀποριά, καὶ βρῆκαν τὴν Ἀθανὰς καὶ το Βάσκαναν· καὶ ἔτρυχα ἐγὼ ἡ Μαρία καὶ σὲ ξεβάσκανα μὲ τρία σπειρία ἄλας* ("Mr. and Mrs. So-and-So set out to go to a lonely, desert place and found Tommy and overlooked him. And I, Jane, happened to come along and have cured you of your overlooking with three grains of salt").

Next drop three coals into the water, one by one, counting each time backwards from forty and saying *ἂν εἶνε ἀπὸ ἀντρα, νὰ βγοῦν τὰ μάτια του καὶ νὰ σκάσουν τὰ πουπούλια του· ἂν εἶνε ἀπὸ γυναικα, νὰ βγοῦν τὰ μάτια της καὶ νὰ σκάσουν τὰ βοζαῖα της* ("If a man did it, may his eyes fall out. If a woman did it, may her eyes fall out and her breasts burst").

§ 5.—THE NATURE OF THE SPELLS.

The first of these exorcisms bears little or no relation to any of the others, relying, as it does, mainly on the superstitious value of the number three and the medical effect of "smoking" the child. The six exorcisms which follow are, as will be seen, closely interrelated, while the eighth again stands by itself.

In the six the familiar mixture of religion and superstition confronts us both in formulæ and ritual. Thus, in Nos. 2, 4, 5, 6 and 7 the operator sanctifies the water she uses by signing the cross over it. A further religious element is added to No. 5 by saying "O Christ and the Virgin," and to No. 6 by invoking the Father, Son and Holy Ghost and by repeating the Creed. In No. 7 the words "Our Father" are murmured forty times, as in No. 3, their potency in No. 7 being enhanced by prefixing the superstitiously valuable word "forty." The same spell invokes Christ as the conqueror of evil, and appeals to the healing saints Cosmas and Damian.

On the superstitious side salt and live coals are used in all the exorcisms, the symbolism being apparently that the evil eye is to "burst" with a sound like that of a live coal hissing in water or of salt crackling in the fire. The latter is indeed explicitly stated in one formula of No. 7 ("As the salt 'bursts,' so may the child's trouble 'burst'"). The admitted virtues of salt as an antiseptic, a strengthener and a preservative, account for its choice as a weapon both of defence and offence against the evil eye. We ourselves, it may be added, believe, at least on Saturdays, that evil is averted by throwing salt over the shoulder, as in No. 5.

Apart from the mimetic symbolism of a live coal hissing in water, it is not easy to understand why a coal should have power attributed to it. No explanation has ever been offered me by the people themselves. It may possibly derive from

their knowledge of the cleansing and disinfecting properties of charcoal ash. As their usual fuel is wood, the "coal" is always a piece of charcoal. Educated Greeks have suggested to me that the coals sink or float according as they are very porous, and therefore absorbent of water or not, a scandalously rationalistic interpretation of their alleged "testing" powers.

Passing from superstitious ritual to superstitious formulæ, we find that these are at once more varied and more interesting than the religious. In the latter no explanatory ritual accompanies the spell, in the former such an accompaniment is the general rule. Thus, in Nos. 5 and 7 words and actions alike suggest washing away evil; as the exorcizer in No. 7 destroys the cross she made in the ashes, she claims to destroy the evil. Water is to be poured out into the gutter in No. 7 that the trouble may vanish as the water vanishes. In the same exorcism the patient's sickness is supposed to be ended by the extinguishing of the coals and tongs in the fire. At the end of this spell, however, occurs a formula divorced from any explanatory ritual, when both day and night are invited to remove the spell; it is no more than an attempt to exhaust the contingencies in which the evil befell the child, and is only one more example of the foolish meticulousness which characterizes many "old wives' remedies." A few mere imprecations conclude the list of superstitious formulæ.

It will have been noted how many of the *motifs* found separately in Nos. 2, 3, 5 and 6, recur in No. 7. The connection between them is so close that No. 7 may almost be considered as the parent of the others.

The remnants of a "narrative charm" are found in No. 3, and again in No. 4. As already stated, I possess a fuller version, collected from a source outside the scope of this paper. No. 8 is a separate and complete "narrative charm," chiefly remarkable for its confusions of thought and gender.

A striking feature in the exorcisms is the use of "lucky" numbers. *Three* is found in the ritual of No. 1 (3 times), No. 2 (twice), No. 3 (once), No. 4 (once), No. 5 (four times), No. 6 (five times), No. 7 (six times as *three* and once as *nine*, its multiple), and No. 8 (twice). *Forty* occurs in the ritual of No. 3 (once), No. 5 (once), No. 7 (twice) and in the formulæ of No. 8 (once), of No. 7 (three times). Exceptionally, *five* coals are used in No. 3. Numerically *three* appears more prominent than *forty*, yet it is the latter which has given its name to exorcisms (*σαραντισματα*) and exorcizing (*σαραντιζειν*).

A word remains to be said on No. 7 where the exorciser strokes the child's forehead with her thumb. This is evidently rudimentary massage, and it is certainly very soothing, as this particular girl does it. Differences in the touch of people's hands are popularly recognized, while another form of head massage is still in backward Bogatsko required of young wives if their mothers-in-law find it difficult to go to sleep: it is the *ἐλα νά με ψειρίσῃς* and *pire tchigar* which alarm our modesty at intervals in Greek and Turkish folk-tales, but are seldom to be literally translated.

This slight scientific element of cure being admitted, there seems nothing more of scientific value in the spells. The words are generally a patter of mere nonsense, a fragmentary spell being as potent for healing as the complete edition. It is by their suggestion of help and healing that the spells work, exercised, as they are, on people extremely susceptible to suggestion, whether it be for good or ill, for sickness or health. And so even the men who in health affect to despise such "old wives' remedies" (γυναικεῖα πράγματα) have glad recourse to them in sickness and find frequent healing.



FIG. 1.—A SHATISTA GROUP.



FIG. 2.—FETCHING WATER, SARAKINA.



FIG. 3.—BOGATSKO CHONES.



FIG. 4.—A "WISE WOMAN" OF KASTORIA.

THE EVIL EYE IN SOME GREEK VILLAGES IN WEST MACEDONIA.

STONE CIRCLES IN GAMBIA.

By the late HENRY PARKER.

Percy Sladen Memorial Fund Expedition.

§ 1.

THROUGHOUT the British portion of the Gambia Valley the traditions regarding the past distribution of the inhabitants agree that in early times the occupants of the lower part of the valley, more especially those on the northern side of the river, were the Serères and Jōlās,¹ two agricultural races who are believed to be descended from the same ancestor, although now their vocabularies are altogether dissimilar. They are stated to have advanced down the valley from a country to the eastward—that is, evidently, the Niger Valley. Whether they ousted any earlier aborigines is unknown.

Long after they had become settled in permanent villages along the Gambia, and had brought the land more or less under cultivation, an invasion by their northern neighbours, the Wolofs, a very dark race, who had also come originally from the east down the Senegal Valley, drove the westerly settlers, the Serères, from the neighbourhood of the river into the interior on the north side, where they occupy a district known as Sîn. They designate themselves as Sîn-Gandum, “the people of Sîn,” and state that the appellation “Serère” is an offensive nickname given to them by others. The invaders also caused the Jōlās to evacuate all their lands on the northern bank, and to migrate across the river into the territory on the south side. Apparently the Jōlās then spread westwards towards the coast, and southwards as far as the Casamance River. A branch of the Jōlās may have advanced in this southern direction at an earlier period, as the southern people have differentiated to some extent in both customs and language from those who occupy Fōnyi, the tract near the Gambia.²

Like the Serères, the Jōlās consider the name by which they are now known an offensive one. It is a Mandiūka word meaning “he who pays” (or repays), and refers to the character they bore for avenging injuries. A Jōlā’s own name for himself is Agyamāt (pronounced with an indistinct hard *g*, sometimes almost like the Arabic hiatus). There are traces of a Bantu affinity in the grammars of the Serères and Wolofs, while in the case of the Jōlās the Bantu connection is so

¹ Diolas of French authors; as pronounced in the Gambia Valley by the other races the initial is a distinct and strong *J*, with the English sound of *dj*. The people themselves, if they use the word, pronounce it *Gyōlā*.

² See the reference to their pottery near the end of this section, and also in section No. 3.

evident that the language may perhaps be added to the other Bantu tongues without much chance of error.¹

A considerable number of Mandiñkō (usually termed Mandingoes), the residents of Mandiñ, "the Wilderness" (a Wolof term), to the west and south-west of Bamako on the Niger, also moved westwards into the Gambia Valley, and settled down behind the earlier arrivals, a small part of them also passing along both banks of the river as far as the Atlantic coast. Some believe that the Mandiñkō united with the Wolofs to expel the Serères and Jólâs from their territory, but this may be an error, as the expulsion appears to have occurred before the Mandiñkō arrived in the valley.

A few intruders from the great Fula districts of Futa-Tôro on the northern side, and Futa-Jalon on the southern side, also penetrated to the river, and settled down near each bank, evidently at a much later date. This completes the traditional account of the early occupation of the country, although it is possible that some additional details may yet be gathered from those who have preserved the old ideas and tales of the past. We must now look elsewhere for additional information bearing upon this subject.

When the Carthaginian general Hanno, in the early part of the fifth or late in the sixth century, B.C., sailed on his voyage of exploration along the north-western shores of Africa, he recorded, in his written account of the journey, that he took with him interpreters from the mouth of the Lixus River (now called the Draa). These persons, who would doubtless be fishermen, must have been previously acquainted with this coast, and accustomed to sail along it occasionally, even if only when driven southward by violent winds. He stated that he sailed from Lixus "for twelve days coasting the shore, the whole of which is inhabited by Ethiopians," but the interpreters could not understand their language, and they fled at the approach of the Carthaginian fleet. These people appear to have been the Perorsi, who are mentioned by later writers as occupying this tract. He also met with a river containing crocodiles and hippopotami, which is supposed to be the Senegal (Senekal of the Berbers and Moors).

After returning to Lixus, probably for more provisions, he resumed his adventurous voyage. Two days after passing what was clearly Cape Verde, he recorded that they came to "an immense opening of the sea." This must have been the estuary of the Gambia, which is so wide that the low shores are not visible from the central part near the sea. On each side of it as he sailed up the river—or, as he wrote, "towards the continent"—was a plain "from which we saw by night fire arising at intervals in all directions, either more or less." He must then have been higher up than the estuary, since for some miles above Bathurst, the

¹ See Sir H. H. Johnston, *A Comparative Study of the Bantu and Semi-Bantu Languages*, vol. ii, pp. 202-211.

capital, one shore is invisible from the other, and he would probably keep near one of them. It is clear, too, that he spent one or more nights up the river.

The fires are to be seen at the present day. They are caused by the annual burning of the millet straw left in the fields after the reaping of the ears, and of the dense tall dry grasses and brushwood which cover the lands that have been left fallow. The reference to these fires fixes the season as being between the middle of January and the middle of March. At that time the Harmattan wind would be blowing from the north-east, across the Sahara, and doubtless it would prove of material assistance to the progress of Hanno's ships when on the open sea.

His record proves that the country was already well occupied by people who practised agriculture and kept cattle in the same manner as at present. Soon after the dry grass has been burnt off a new growth springs up on which the cattle feed readily, while the burning of the millet straw, as well as the grass on the fallow lands, furnishes a useful manure for the fields. It is most probable that the inhabitants had been settled in the district, and had developed these methods of culture long before Hanno's time, in that vague past which is such an impenetrable darkness in Africa outside the Nile Valley. As there are still no other people about that coast, with the exception of the Mandinkō already mentioned, who may have arrived there at a later date, it must be assumed that these early residents were the ancestors of the Serères and Jólās, and possibly of some part of the Wolofs. From the Gambia, Hanno continued his voyage southward and made no further reference to that part of the coast.

Little advance in the knowledge of this portion of Africa had been made public up to the time of Pliny (77 A.D.); but there are indications that it had been further explored as far as the Gambia, and that those who visited it had got into communication with the natives as early as the second century B.C. In that century Polybins noted that south of the Perorsi were the Daratites, distinguished by the appellation "Ethiopian" from the Dara-Getuli, apparently the Melano-Getuli of Ptolemy, who occupied the interior tract near the Draa or Dara River at the border of Morocco. After the Daratites came the river Bambotus, beyond which it was reported that there was nothing but mountains for a long distance to the south. As such mountains are non-existent there, this statement shows that the re-examination of the coast had not proceeded beyond the Gambia.

Ptolemy, who wrote about 150–160 A.D., gives the name of the river from which the Daratites derived their title as Daras or Daradus, with its mouth in 15° north latitude. These details finally settle the question as to the identity of the river. It is certainly the Senegal River, which is still termed Ndar by the Wolofs, Ndara by the Mandinkas, and Ndaro by the Fulas of the Gambia Valley. Its mouth is about 16° 30' north of the equator.

Thus there are two West African rivers of practically identical names—the Draa, or more correctly the Darā, at the southern border of Morocco, and the Ndara

of Senegambia; and when this is understood the difficulties which Sir E. H. Bunbury could not overcome in his *History of Ancient Geography* no longer exist. Apparently the Ethiopian Daraites are to be identified as the Wolofs, whose territory, Jolof, extended along the south bank of the Senegal River.

Daradus is a compound of two words which should be united by a hyphen, as Dara-dus. The second component appears to be the Wolof word *dēh*,¹ which means "river." If a Wolof were asked to state the name of the Senegal River he would reply "Ndarā-dēh." The early travellers seem to have transformed this into "Daradus." It is worth notice that at least three rivers are called Dara or Darā, there being one in Palestine. Whether the people who gave it this title were connected in any way with the namers of the two West African rivers is a matter on which I am not qualified to express an opinion. The Arabic word *darā*, meaning "spread out" or "repelled," would be applicable to many other rivers.

With regard to the second river, the Bambotus, which must be the Gambia, this word is also a compound, and apparently should be written Bambo-tus. The last syllable may perhaps be due to the analogy of Dara-dus; to the early travellers, unacquainted with these languages, it might seem that if Dara-dus meant "Dara River," Bambo-dus or Bambo-tus would be the term for "Bambo River." The alteration of the initial alveolar sound *d* to *t* may be due to the influence of the preceding *b*, so as to avoid the abrupt change from a labial to an alveolar sound. This is put forward as a mere suggestion which may offer a possible explanation of the syllable *tus* in the name of the river. Whatever uncertainty there may be regarding it, the meaning of the first part of the name is not doubtful. In the languages of the races settled at or anywhere near the mouth of the Gambia, the word "Bambo" occurs only in Mandinka, in which it is in everyday use to express "crocodile." Thus Bambo-tus would mean "Crocodile River." Pliny stated that Polybius specially described it as being full (*refertum*) of crocodiles and hippopotami.

In the second century, A.D., Ptolemy called the Gambia the "Stachir," a word that cannot in this form belong to the local languages, which have no *sta* sound in one syllable; a vowel must intervene between the two consonants. If the word be *sita*, meaning "baobab," the syllable *chir* might point to *jiri*, the word for "tree," as the second part of the compound. In the Bambara dialect this becomes *jiri*, and the letters *j* and hard *g* are often interchangeable as initials.² Thus, in Mandinka a water-pot is *jibidā* or *gibidā*; a leaf is *jambo* or *gambo*; an ear of millet is *jinso* or *ginso*. The Mandinka *jigo*, "water," becomes *gye* in Mande; *joŋo*,

¹ This is pronounced *dāh* in the Gambia Valley, where *dāh* is given as the word meaning "stream." Ndara-dāh comes very near Daradus. The sound which I have represented by *h* is written *kh* by French authors; it has practically the sound of *ch* in "loch."

² In Gynla, or Dgula, a Mande dialect, the *j* sound, so distinctly heard in the British part of the Gambia Valley, is altogether replaced by *gy*, according to M. Delafosse. In the Jolā language a similar change is made.

"slave," becomes *gyon*; and *jato*, lion, is *gyara*. According to this, Stachir would mean Baobab-tree (river); but such an explanation depends on too many "ifs" to be trusted, and I offer it as only a suggestion in default of a better one.

The name Bambo-tus may possibly indicate that some Mandinka people¹ had already settled on part of the lands not far from the mouth of the Gambia River, not later than the second century before Christ. The final *o* sound specially differentiates Mandinka and Hasonka nouns from those of all the other Mande or Mandin dialects.

To find the early home of all the Mandinka tribes we must look far away to the north-east, to the neighbourhood of the Mediterranean Sea. In the fifth century before Christ, when Herodotus wrote his history, "a powerful and numerous nation" who were known by the Greeks and Romans as the Garamantes, from their chief town, Garama, occupied an extensive tract to the south of the Nasamones, who lived at the side of the Syrtis Gulf. Their territory stretched into the desert region or Sahara, and for a great distance east and west. They continued to hold it up to at least the time of Vespasian, late in the first century A.D.; and then they disappeared from view. As they cannot have been suddenly exterminated, it is the general opinion that they moved southward across the Sahara, and that the Mande peoples are their modern representatives.

It is not necessary to assume that they migrated in one great horde; for many years small parties may have crossed the deserts, and established settlements in the more fertile tracts to the south of them. According to Herodotus, five Nasamones made their way through the Sahara as early as the fifth century B.C.; and in the succeeding six centuries the paths leading to the south must have become well-known. Even in the time of Herodotus the nature of the interior of the Sahara had been ascertained, evidently by those who had been through it. He noted that "the country is desert, without water, without animals, without rain, and without wood, and there is no kind of moisture in it." The Garamantes were already actually in occupation of the habitable parts of the Sahara on its northern side, and they might have by that time discovered the practicable ways through it which lead to Murzuk, Agades, and other oases.

At a later date there can be no doubt that this knowledge had been acquired, since two expeditions which succeeded in passing quite across it, probably in the second century after Christ, are recorded by Pliny to have been undertaken by Roman troops. In the first one, which was in charge of Julius Maternus, the Roman governor of the province, the route adopted and the point reached are not stated, but, at any rate, a country inhabited by black people, who are termed "Ethiopians," was visited. The second expedition reached an Ethiopian town called Agisymba,

¹ *Mandinka* is the adjectival form. *Mandink* or *Mandinkeyo* means "Mandin man"; the collective form is *Mandinka*, "the Mandinka people," the *Mandinkas*, improperly termed Mandingoes.

passing on its way through Garama, where it was joined by a force of Garamantes, whose king had been about to lead an expedition across the desert on his own account. It is evident, therefore, that he maintained some sort of intercourse with the people to the south of the Sahara, whose conduct may have rendered it advisable to punish them.

Such military demonstrations cannot be treated as mere visits of exploration, for which only a strong guard would be necessary. Sir E. H. Bunbury raised some objection regarding the transport difficulty before the introduction of camels, which he wrongly believed were introduced afterwards by the Arabs; but evidently the Nasamones were able to overcome it hundreds of years before that time. In such marches the troops would be sent forward in batches, and relays of slaves might be employed in carrying provisions. In any case, we must not think of these so-called "armies" as consisting of large bodies of soldiers. When Mauly Ahmad, the Sultan of Morocco, despatched an expeditionary force in 1590 A.D., to conquer Timbuktu and the whole of its extensive territory, it consisted of only 3000 picked cavalry and foot-soldiers, with about 6000 non-combatant followers. According to the *Tarikh es-Sudan*, "the History of the Sudan," they made their way to the Niger, and arrived there, "safe and sound," in about four and a-half months of the cool season—from some time in November, 1590, to March 30, 1591—and rapidly accomplished their object.

There is one bit of direct evidence which appears to be conclusive as to the identity of the Garamantes with the Mande or Mandin people. When Cornelius Balbus was granted a triumph for his conquest of the Garamantes in the first century A.D., he carried in the procession a list of the towns, rivers, and races overcome or met with. The latter part of the list, which Pliny fortunately published, after mentioning the river Dasibari, ends thus in Philemon Holland's translation: "And againe forward [that is, southward]¹ these towns lying one to another (*moz oppida continua*), Baracum, Buluba, Alasi, Balsa, Galla, Maxala and Zizama." These were the southernmost settlements or villages of the Garamantes. Excluding the last two, all these names have a distinct Mandinka or Malinka appearance, and one of them, Buluba, is an undoubted Malinka word which is still in every-day use, with the meaning "right hand" (*bulu*, hand or arm + *bā*, great), but also signifying "south" or "southern." The Fulas, too, use *yānu* and *nānu*, for "right hand" and "left hand," and also for "north" and "south." In India and Ceylon the expression for "south" is "the right," *dakkhina*. Among the Arabs, also, "right" and "left" mean "south" and "north." The village which received this name was evidently "the southern village," *Bulu-bā kundā*, the word for village being understood, as in the case of others in the list.

With the exception of Maxala and Zizama, the other names of this group of southern villages do not merely resemble Mandinka words; they are also capable

¹ All words in square brackets are inserted by me.

of explanations in Mandinka, or the closely allied dialect, Malinka, as follows:—

Baracum.—This word may be *Bara-kundā*. There are now villages called *Barō-kundā* in the Gambia Valley. *Bāra* is a Mandinka word for a boat. In Mande, *bāra* means “bitter manioc,” “calabash,” “gourd,” and in Malinka, “work.” One of these meanings might be applicable in this case. *Kundā* is the Mandinka word for a village.

Alasi.—Possibly this may be *Lasi-kundā*, “the closed village,” that is, one shut in or defended by a protective fence or stockade, *sansano*, of some kind.

Balsa.—This word may be *Bālu-sā*. *Bālu* is the plural of *bā*, goat; in Fula the word is also *bālu* in the singular and *bāli* in the plural. *Sā* (in Malinka, *saha*), is still the Mandinka expression for a market. Hence, *sā + tē*, place or site, originally signifying the place or site of a market, has come to denote a town. Thus, *Balu-sā*, followed by *tē* or *kundā*, would be the site or village of the goats' market.

Galla.—In Malinka, *gala* is a meeting-place, or place of assembly.

Rapsa.—This word occurs in the earlier or more northern part of Pliny's list. *Rap* is not a Mandinka word. If it was borrowed from Phœnician traders, the word might be *Rab-sā*, “the market of the lord or master.”

Tapsacum.—Another name in the northern part of the list; it might be *Tabu-sā kundā*, “the village with a market at a Tabu tree,” the broad-leaved fig.

Dasibari River.—The second half of this word may possibly mean “river,” the modern Mandinka expression for which is *bā*, as in *Bā-koi*, White River, *Bā-fiñ*, black (or blue) river, the two main effluents of the Senegal River. All the lower part of the Gambia River is called merely *Bā* by Mandinkas, and by Fulas, *Mâyō*, a word with the same meaning. *Bāhre* and *bāre* in Fula denote both the sea and “lacustrine river,” according to Reichardt. The Fula word for the Arabic *bahr*, sea, is given by him as *bah'aru*; this is pronounced *bāro* by Fulas of the Gambia Valley. In Pliny's History other rivers of northern and north-western Africa have names ending in *bar* or *bur*. In his Garama list there is a *Nathabur*; others are *Nabar*, *Sandabala*, and *Subur*. Thus, *Dā-sī-bari* might possibly be “Border-lying river.”

While these examples merely show that possible, and no far-fetched, derivations of the names may be found in the Mandinka and Malinka dialects, the word *Bulq-bā* stands out as certainly a Malinka word (the Mandinka form being *Bulo-bā*), which is quite applicable to the position of a large village in the south part of the country of the Garamantes. It appears to prove that they spoke a Mande language, that is, that they were the early Mandinka people.

A name given in the Sudan to the various Mande races, but not now employed by themselves, is Wangara. The short dark people who were encountered by the Nasamones most probably spoke a language allied to Bantu, and Wangara is distinctly like a Bantu name,¹ which would mean "the people of Ngara," or Gara. Whether this is connected in any way with Garama is uncertain.

A possible reason for the migration of the Garamantes may be found in the account given by Herodotus of their objection to the visits of strangers, and of their protecting themselves against such intrusions by sinking concealed pit-falls along the paths leading into their territory. When they had been conquered by the Romans, placed under a Roman governor, and found it impossible to recover their ancient independence (and doubtless were subjected to the exactions of Roman tax-gatherers, possibly also to the conscription of many of their young men for military service out of the country), they may have decided that it was preferable to face the dangers of the march across the Sahara, and to join those who had already become established in the fertile valley of the Niger.

It is evident that such a movement of a nation would not be undertaken unless they had acquired a definite knowledge of the country they were about to occupy. We do not know in what part of the Sudan they first settled. Sir H. H. Johnston suggested in *The Colonization of Africa*, note, p. 12, that the town of Agisymba, which the expedition of the Romans and Garamantes reached, was "probably Kanem or Bornu," that is, far to the east of Timbuktu. The earlier part of the migration may have taken this route. The present Mandinka tradition is that they first settled far to the east of Mandin, and afterwards proceeded to an intermediate site to the west of that one, finally advancing still westward to Mandin.

The *Tarikh es-Sudan* states, according to the translation by Professor Houdas, regarding the empire established in the Niger Valley by the Mande people, including under that term all the races who speak the Mandinka dialects: "Melli [or Mali, as it is also written] is the name of a great country, very spacious, which is found at the extreme west, by the side of the Atlantic Ocean. . . . We are assured that this kingdom existed before the Hegira [622 A.D.], that twenty-two princes reigned there before this epoch, and that there were equally twenty-two who reigned after it. That makes in all forty-four kings. They were of white race, but we are ignorant from where they took their origin. As for their subjects, they were the Oua'kori. When this first dynasty disappeared, it was replaced by that of Melli, of which the princes were of black race." In a foot-note the Professor explained that the Oua'kori were "the Wangara, that is to say, the Mande or Mandingoes."

In the Gambia Valley I was informed that, according to the Mandinka tradition, the early rulers were chosen from the "White Bambaras," who are considered to be of the purest descent. I was astonished to meet with one who was making a

¹ Among the "Older Bantu" names of Eastern Bantu tribes two are called Wa-guru [? Wa-luguru] and Wa-nguru.

journey in the upper part of the British Protectorate. He had long dull brown hair, grey-blue eyes, a straight nose, and a skin muddier but little darker than that of some of the natives of southern Europe. He was clearly a man of "the Mediterranean race." Three varieties of the Bambaras are recognized, the white, the brown, and the black. The first one evidently preserves the original light tint of the race; the other two, and all the rest of the Mande people, have become much modified in this and other respects, probably by an intermixture with the blood of Negro slaves. In fact, a Fula of Bundu remarked to me that in his part of the country the Mandinko are considered to be racially like the Tukatōro, a Fula-speaking race who occupy Fula-Tōro, an extensive tract between the Gambia and Senegal Rivers, and who are believed to be the result of an intermingling of Wolof and Fula blood. They are the "Toucouleurs" of French writers; the Mandinko term them Tōronkas, people of Tōro.

We do not know the average length of rule of the early Melli sovereigns; but assuming a period of only ten years, the reigns of the first twenty-two kings would carry back the first dynasty to about 400 A.D., or perhaps two hundred and fifty years after the expedition of Julius Maternus. If their reigns lasted fifteen years on an average, the date would be one hundred and ten years earlier.

In Golberry's *Travels in Africa* (in 1785-1787), a tradition of the Mandinkas of the lower part of the Gambia Valley is recorded. He was informed that "about the commencement of the tenth year of the Hegira, Amara-Sonko, a celebrated Mandin warrior, descended from the interior of Africa at the head of more than 20,000 armed men, and followed by a great number of women and Marabouts [Muhammadian priests]. He ravaged all the northern coasts of the Gambia [river], arrived towards the mouth of the river, where he fought many battles with the [Wolof] king of Salum, and finally remained conqueror." Later reinforcements which were despatched from Mandin enabled him to consolidate his position, and he became the permanent ruler of the lower part of the right bank.

If, in the absence of more definite information, we are driven to accept the old traditions of the residents, and the logical deductions from other historical facts, as being possible, or even probable, approximations to the true history of the early settlement of the races in the Gambia Valley, we must arrive at the following conclusions:—

- 1st. That people who spoke a Mandinka language may have been settled at the mouth of the Gambia in the second century B.C.
- 2nd. That the main body of the Mande, or Mandin, or Wangara nation had reached the Niger, and had established the kingdom of Melli or Mali, by about 300 or 400 A.D.
- 3rd. That the Gambia Valley was invaded by Mandinkas from Mandin, and was annexed by them soon after 632 A.D.
- 4th. That these people were the Garamantes.

5th. That the other early inhabitants of the Gambia Valley also came from the East, out of the Niger Valley, and were allied to the Bantu races of Central Africa.

The authors of *Une Mission au Sénégal* (1900) mention a southern tradition that the Serères came originally from Kabu in the upper Casamance Valley, and belonged to the same group as the Jólās. According to this, only three or four centuries have elapsed since they were driven north and across the Gambia, by Mandiūkas and Fulas. This does not agree with the Gambian traditions, and it appears to be improbable, as the whole Jólā people intervened then between the Casamance and Gambia Rivers. According to my present information, Jólās were living to the north of the Gambia more than two thousand years ago, and the Wolof tradition definitely places the Serères beside them.

But some part of the Jólā nation must have been settled in the Fönyi district, south of the Gambia, in the prehistoric time when the pillar-circles were being erected in the tract along the river. Parts of a jar of thin pale yellow pottery were discovered in one circle, 3 feet and 1 foot below the surface, and fragments of the same kind were collected by me at shell-mounds at Vintañ, in Fönyi, in the country of the modern Jólās. The people stated that the clay from which such earthenware is manufactured is met with only in French Fönyi, and they were unanimously of opinion that all such specimens were conveyed from there. Possibly it may also occur further to the south, but, so far as I could learn, there is none in the main valley of the Gambia. I saw no unbroken article made of this material, but I believe they are made still.

I may also note here that throughout the district in which my investigations of the circles were prosecuted, there are to be found lying on the ground, in some places, often near the circles, small fragments of a coarser dark brown pottery, an inch or an inch and a-half square, impressed or engraved with simple hatched designs which are practically identical with those employed by the modern northern Jólās. These are illustrated in connection with an excavation made at a circle at Tamsur Ahmadu Aliyī Village, where one of the same motives occurs on similar pottery lying near the buried persons. All the villagers identified these old fragments as "Jólā pottery," and they stated that no other race of the Gambia Valley either manufactures or makes use of pottery of this character. These facts are, I consider, convincing proof of the correctness of the ancient tradition regarding the former occupation of the district by the Jólās.

We have this evidence, which may be accepted as trustworthy, of a prehistoric trade along the river. Either the makers, or, more probably, traders, brought the yellow pottery (if not the brown also), to barter, or the people of the pillar district made special journeys down the river for more than one hundred miles in order to acquire it. There seems to be no possibility of doubt that both these

varieties of earthenware were manufactured by Jólās in the ancient times, some centuries B.C. Thus it may be said to prove that a branch of the Jólās was already settled at that period in Fōnyi—how much further south is unknown. The ancestors of the Serēres who are found in the Upper Casamance Valley appear to have been the leaders in this early southern movement from the Gambia Valley; the Jólās followed them. The rest of the Serēre nation spread northward into the Sin district, perhaps under the pressure of the Wolof advance, which drove the remaining Jólās across the river.

The fact that the existing paths from the interior to the river are identical with those of prehistoric times, as the numerous circles found along them abundantly demonstrate, is a proof that the early inhabitants possessed nearly the same trading stations along the Gambia as at present. There could be no other reason but trading facilities for opening these ways from the interior for many miles down to the river. The people cannot have journeyed from distant villages merely in order to catch fish in the river. Occasionally they might return with a small supply of rice that had been grown by local residents in low-lying lands, but the area suitable for its cultivation is so limited that it is only immediately after the small crop has been gathered that any supply is available for sale. Practically all the other crops which are grown near the river are also cultivated in the interior. Thus it would seem that the only use for such roads would be to permit the people of the inland districts, while visiting friends on the way, to proceed to these trading-places at the river in order to exchange their products for goods of some kind which were obtainable at them.

I have already remarked that the pottery of the Fōnyi district was one of these articles. Salt was most probably another. In the eighteenth century (1730) there was a considerable importation of it from the mouth of the river, near which it was extracted from a pit or pits of some kind—probably shallow excavations—according to Moore. He stated that it always found a ready sale, and that cargoes of it were also brought from the Cape Verde Islands. This local transport by canoes would be a much simpler matter than conveying it by land from the distant mines of the Sahara. The quality might be inferior, but that could be improved by dissolving and re-evaporating, so as to eliminate most of the earthy or sandy particles. Sun-dried fish would also meet with a good market, and possibly kola nuts; and rice grown in the southern Jólā country, where several varieties not found up the river are produced, might also be imported.

For the return journey down the river, the traders might carry cargoes of the various kinds of millet, as at present, together with sun-dried salt meat, hides, and perhaps a little Mandiñ gold. Cattle and sheep might also be taken.

§ 2.

The portion of the Gambia Valley in which menhirs and stone circles of worked pillars occur extends eastward on the north side of the river, from Balangār, 114 miles

from Bathurst, the capital, at the head of the estuary, up to the Kunchawa Creek. On the south bank, according to my information they are found only in a very circumscribed tract about 150 miles from Bathurst (see hatched areas on map).

Throughout the pillar-tract, the banks of the river are little above flood level, and the ground rises gently into the interior. At intervals of a few miles low ridges of brown iron-stone rock approach the river, and in some parts run nearly parallel to it for several miles. The rest of the soil is mostly cultivated, the crops grown being various species of millet, ground-nuts, Indian corn, cassada or manioc, a little stunted cotton, and small patches of rice in suitable low-lying sites along the drainage lines, and the sides of pools and swampy places. Sowing is carried on during June, July, and August, and the crops are gathered from October to March (!) The rainy season is from June to September, inclusive, and during the rest of the year little or no rain falls, excepting that of an occasional tornado, or an errant thunder-shower.



SKETCH MAP OF GAMBIA. (SCALE ABOUT 40 MILES TO 1 INCH.)

At irregular distances of a few miles along the river there are trading stations with wharfs on wooden piles, at which sailing cutters and small steamers and steam launches call to deliver goods, and to ship the surplus produce of the country, which they then convey to Bathurst. Large steamers of low draft pass up the river as far as McCarthy Island, over 100 miles from Bathurst.

As a general rule, there is a native village close to each wharf, from which footpaths keep open communications with the interior, running in a fairly direct line away from the river for long distances, through both British and French territories. Other paths connect these lateral ones. Villages are established along the paths at distances usually not exceeding three or four miles.

The circles of pillars are found closely adjoining almost all the villages in these districts, or in their neighbourhood, especially in the western part. This fact indicates that the distribution of the population has not altered much since the early period when the pillars were erected. It is unusual to find circles more than half a mile from the existing houses; commonly they are not more

than a quarter of a mile away. From this it would seem that they were set up by the early residents of the villages.

According to the local tradition which I have already recorded the inhabitants of this part of the country in early, that is, prehistoric, times, were Jólās. Evidently it was this race who had reclaimed and cleared the land, and had brought it under cultivation. There is no tradition and no trace of any earlier occupants. At present, the district is chiefly held by Wolofs in the western part; Tōronkas (sometimes called Tukatōro, a Fula-speaking race, from Futa-Tōro, which lies to the northward), to the east of the Wolofs, but only in scattered villages; and a few Mandiŋkas or Mandiŋkō, the Mandingoes of other authors, towards the more eastern part.

A former Almāmi (or Imām) of McCarthy Island, who had travelled through part of French Senegambia, and who was for some time my interpreter on a former visit to the Gambia, informed me that he had seen two pillar-circles, like those of the valley, in the Timbi district, which is about 44 miles to the west of Timbo, and lies to the south-east of the pillar-tract of the Gambia; but I have been told that his statements should not be accepted without corroboration. An English mining engineer who had passed on prospecting journeys several times through Timbo and its neighbourhood, and up to the Faleme River, stated that he had not seen any stone circles in that part of Africa. Nevertheless, I may add that, according to my experience in the Gambia and Ceylon, it is very unusual for such definite evidence to be without some foundation, especially when the informant has nothing to gain by inventing it. In West Africa, and also in the jungles of Ceylon, I have had several fruitless tramps in search of pillars in the first case, and inscriptions in the other: but there was always at least something to which my guide could point as the thing I wished to see. On one occasion in Ceylon, at the end of a walk through very thorny jungle for 5 miles, terminating in an actual crawl beneath the thickest and otherwise impenetrable mass of thorns, I was shown some much-contorted, dark, micaceous veins in the face of a gneiss rock, as being an ancient inscription. In the Gambia, I went off to explore the crest of an ironstone hill on which there were said to be "stones"—only to discover that, as I expected, these were merely large boulders disposed naturally in a line by the ancient fracture of a superincumbent thick slab.

In *Cross River Natives*, p. 268 *et seq.*, Mr. B. Partridge described and illustrated some basalt stone pillars with carvings on their faces, which are arranged in more or less circular figures. The stones are waterworn and smooth, but are not stated to be cut to their shapes. Some were erected recently within the memory of living persons; he remarked that others may be several centuries old. Each one was deposited to commemorate the death of the local chief, but the sites were not burial-places.

With the possible, but doubtful, Timbi exception, I am not aware that there are other circles of worked pillars in Africa to the south of Morocco, and the countries

along the south side of the Mediterranean Sea. Even there, the circles are, apparently, formed of rough undressed stones, with possibly a few exceptions. The Gambia circles are separated from these by hundreds of miles of the Sahara deserts.

The lithic remains in the Gambia Valley belong to two categories, which, though sometimes associated together, are apparently unconnected. These are (1) circles, of worked pillars—many of which are standing, though numbers are prostrate—which I term *Pillar-Circles*; and (2) *Menhirs*, or independent pillars, often occurring far away from any circles. Even when these are found in the neighbourhood of circles, there is no apparent connection between the two classes of remains. There are also numerous worked pillars standing in groups close to many of the circles, and often established concentrically with the stones of the circles, which evidently form part of the adjoining circle-group. In other cases, such stones are fixed in pairs, and more rarely in threes, at varying but short distances away. I refer to them as “outer pillars.” In three instances there are irregular groups of menhirs, commonly in pairs, that appear to be unconnected with the circles, which, however, are not very far from them. I distinguish these groups as “menhir-fields.”

The circles themselves are generally found in groups or clusters comprising from two to nine, but single circles are met with. With one possible exception, there are no uncompleted circles, except those formed by concentric outer pillars standing round an inner circle. One of these outer circles is complete; in another, either two or three stones are needed for its completion; others are in varying stages of development. The groups of circles are arranged in single straight lines; in nearly parallel lines consisting of two, three, or four circles; or in pairs; but never in triangles or pentagons. Many stones are prostrate, and it is somewhat strange that almost invariably these fallen pillars, whether menhirs or belonging to circles, are at least partly buried by the soil which has been raised by the action of earth-worms, or has sunk under the weight of the stone during rainy seasons. Some have their upper face almost level with the ground, and as a rule the others are half or three-quarters covered by the earth, which has usually risen a foot or more, but not quite two feet. Superficially considered, this is the only indication of the age of these structures, and, of course, it would be of great value if we knew the rate of elevation of the soil. Without such knowledge it is only possible to draw the conclusion from this evidence that both the circles and the menhirs must have been erected many centuries ago.

In addition to the concentric outer pillars, there are several instances where the outer pillars are arranged on the eastern side of the circle in a straight line, or even in two parallel lines, in a north and south direction. Such lines are invariably to the east of the circle, and the mid-point of the arcs of the uncompleted concentric outer circles also lies to the east, as though the erection of the outer stones had been begun there, and had been extended equally, or alternately, towards the north

and south, and so on round the circle. As a general rule, a smaller proportion of the outer pillars, but not of the independent menhirs, has fallen than is the case with the stones of the circles; this may be partly due to their erection at a later date than the actual circles, but such a conclusion is extremely doubtful, and no dependence can be placed on it, as several other factors might have some influence. Thus, the outer pillars are usually of a greater size, and especially of a greater diameter, than those in the circles; they therefore rest on a wider base, and ought to be less liable to be overturned, whether by earthquakes or other causes.

A peculiar circumstance is very noticeable with regard to the pillars of circles, or their outer stones when prostrate. At least eight out of ten have fallen outwards, and it is quite exceptional to meet with stones which are lying inside the circles. A simple cause seems to me to afford a satisfactory explanation of this matter, which at first sight might appear to be a result of inimical human agency. The stones, and especially the heavy outer pillars, when dragged from their quarries to the sites of the circles, were too ponderous to be lifted so as to be deposited in a cylindrical pit. A short trench sloping from the outside down to the position to be occupied by the pillar, and some $2\frac{1}{2}$ feet deep at that end, was almost certainly first dug. The pillar was then pushed down the slope, end first, and raised into an upright position; and the trench was refilled with earth not properly consolidated. As a result, in many cases this earth would become partly saturated during succeeding rainy seasons, so that if the pillar did not rest on a level base, it would be extremely liable to take first an outwardly inclined position sloping along the trench, and then gradually to sink till it was at the ground level. The pillars are thus to be seen at all stages of inclination, as well as upright and prostrate. It may have been due to observation of this result of the action of weather and time, that the outer pillars were generally given a greater diameter than the earlier inner ones, but even this did not always preserve them in a vertical position. As a general rule, with many exceptions, the stone in the circles themselves are shorter than the outer pillars, and especially than the menhirs, several of which are among the tallest stones. The outer pillars usually are the widest of all.

Single menhirs, mentioned as pointer stones, are erected outside many circles, and are commonly to the east of the centre of the circle, but some are found in other directions, such as the west or north-west. A difficulty in determining the actual position with regard to the north point at the time when these were placed in their sites is caused by the uncertainty as to the age of the structures. My compass readings, also, cannot be accepted as more than rough approximations on account of the quantity of iron in the stone of which the pillars are composed, which doubtless affected the position of the needle considerably, as I observed on some occasions when noting the bearing a second time in a reverse direction.

Practically all the stones and circles remain intact, that is, in their ancient positions. I met with only one definite instance in which a pillar of a small circle had been actually dug up and removed. This was stated to have been done in recent times by an inhabitant of the village at which the circle was erected. The residents were then intrusive Bambaras, that is, settlers from the far east, who had no traditional respect for the circles, and were not afraid to interfere with them. I was informed that on the delimitation of the boundary between the Gambia territory and French Senegambia, one or two pillars—probably prostrate ones—were removed, and utilized as boundary stones. At the middle of one circle out of a group of nine, four stones have been laid so as to enclose an oblong space which may mark a later burial. It is possible that a very few prostrate stones at other places where they appeared to be missing may also have been taken away into the villages, but this is not certain, and some of them may have been merely covered by the elevation of the adjoining soil. In clearing away earth round some prostrate pillars I have come upon two or three such instances where the stones were completely hidden in this manner.

In the cases where pillars are broken in two, there is no actual evidence that they have been wilfully fractured. There are numerous examples in which the stump of a pillar remains firmly fixed in the ground, in some cases rising a foot or more above the present ground level, while the broken-off upper part is lying close beside it. In such instances the fractured piece has almost invariably fallen outward. I am unable to offer a satisfactory explanation of this effect, unless it was due in special examples to earthquake shock. These observations apply even to the thicker pillars, as well as thinner ones about 18 inches in diameter. The present inhabitants, who have great respect for the circles, and who claim to have held the district since the period when the Jólās, the probable constructors of the circles, were expelled, are most unlikely to have injured them in any way. In fact, they are really protectors of the circles, and they raised objections at first even to my measuring them, and getting the weeds and thorns cleared away from them.

The general state of preservation of the circles varies greatly, owing to the differences in the texture of the stone. A very small number are in almost perfect condition, but very many of the pillars are in a deplorable state of rapid disintegration. This may be chiefly due to the extreme and rapid variation in the daily temperature, which would have a cumulative effect upon the face of the stone. The difference between the minimum of the early morning, immediately after sunrise, and the maximum in the sun may mount up to 120° , and doubtless it often rises to 80° . I have recorded a difference in the shade of 44° Fahrenheit between 6.30 a.m. and 1.30 p.m., and a range of 40° is of common occurrence. The lowest temperature in the shade noted by me in the district was $46\frac{1}{2}^{\circ}$. From about 6.30 in the morning there is in the cool season from October to January a steady increase at

the rate of about 6° per hour up to 1 p.m. It is impossible for such very rapid alternations to recur day after day without tending to cause a corresponding expansion and contraction of the surface layers of the stone. Sooner or later this must lead to disintegration, in the case of a stone of such incoherent nature as that from which the pillars have been cut. An example of the extreme effect of such changes of temperature occurred in my own experience in Ceylon in the case of three pairs of worked stone beams about 7 feet long, laid side by side over the inlets to a sluice, to permit access to the lifting-gear for raising and lowering the heavy valves that regulated the outflow of the water. The joints at the ends of the beams were filled with cement, which was soon completely crushed by the expansion of the stone, and after repeatedly re-grouting them I was obliged to abandon the attempt to close them. Similar disintegrating forces have been acting daily on the surfaces of the pillars of the circles for probably more than 2000 years, and it is inevitable that some disruptive effects must be apparent in cases where the texture of the stone is not close or hard enough to resist them successfully. The result is that large or small flakes of stone have been split off the surface in the majority of the pillars, while in extreme examples the whole pillar eventually has crumbled away, and is now a mere heap of *débris*. All grades of disintegration are to be observed, from the scaling of a single piece of stone from the upper edge of the pillar, exposed to forces both horizontal at the top of the pillar and vertical at the sides, to the complete breaking up of the whole pillar. I have given some typical illustrations which fully explain my account of the effect of this cause in destroying the pillars. In these may be observed an instance out of many, in which the whole of an exposed face has split off. Other pillars are split in two longitudinally, and some that may have been of a circular or elliptical cross-section have now acquired a section of a D-shape, distinguishable by its rougher surface from similar sections which have been the result of deliberate cutting with a chisel or point.

The texture of the stone itself varies from the extremest coarseness to the almost polished fineness of the faces of many of the large outer pillars. Nowhere is there to be perceived any indication of the cuts or wedge-holes made by the stone-cutters; even in cases where a nodule of close grain has been partly cut away in the face of a pillar of less fine texture, the face of the nodule is flush with that of the pillar. I never succeeded in finding the slightest chisel mark, notwithstanding many minute searches. Some of the hard nodules which have been split in trimming the faces of the pillars appear to be so little affected by weathering that I consider these facts noteworthy and unexpected.

As a general rule, the faces of the pillars are distinctly weatherworn, the exceptions being very few in number. In some examples some constituent of the ironstone appears to have been dissolved, and to have re-set as a glaze on the face, protecting the underlying stone from further wear. There is also in many pillars

a number of small tubular holes or channels passing into the interior, like small worm tubes; and in a few instances where they have reappeared at the surface, a channel is to be seen exactly like the tube left by a worm, with a lining of smooth darker colour like the clayey lining of a wormhole. On one stone there are two adjoining half-tubes of this nature, one 6 inches and the other 12 inches long. It is evident that these were left in the face of the stone by the cutters, as half the tube in each case has been chiselled away by them. No others of such a length have been observed, but there are numerous shorter examples.

All the pillars consist of brown ironstone of different shades, lighter inside and dark-coloured by oxidation outside. With the possible exception of the stones of one rude and small circle, all are worked stones, usually as well cut and shaped as the best modern work. In numerous examples I may deliberately say, as a practical stone-cutter, that it would be impossible to improve on the cutting and shaping of the pillars. This is especially noticeable in those which are bowed outwards along the sides (that is, in a vertical direction, like Greek columns), which would be decidedly difficult to maintain in true balance from top to bottom. I look upon some of the work of this nature as quite equal to the best of the stone-cutting of Ancient Egypt, though, of course, the material was far more difficult to work there. There can be no doubt, judging by the accuracy of the carving of the best cut pillars, that the artificers who did the work were both skilful workmen and possessed eyes capable of appreciating the extreme accuracy of form which these stones display. They were no neophytes, but thoroughly well-trained workmen. Of course, many stones exhibit greatly inferior work; I am referring only to the best class of workmanship. It is to be noted that nowhere is there any trace of the rude work of men who were not well accustomed to the use of stone-cutters' tools, and this fact necessarily leads one to inquire how and where the knowledge and skill were acquired. Neither the stones nor the country yield any answer to this question. In the district occupied by the Jôlâs at the present day my information is that no stone circles, or even any worked stones, exist. An interpreter who had travelled through it and was born and lived in it, stated that he had, however, seen some wooden posts, about six in number, set in a circle at a grave in French territory. Thus there appears to be no place in the country where learners of the art of stone-cutting could acquire a competent knowledge of the handling of the tools, and the technical training necessary to enable them to produce accurately shaped pillars having vertically curved outlines.

There was no manufactory of the pillars for a whole tract of country. Doubtless they were quarried locally at the nearest suitable site on one of the ironstone ridges, from about an eighth of a mile to some four miles distant. All the cutting was executed at or near the quarry, and no stone chips are to be seen at any of the circles. At one quarry I met with several fractured pillars which had been abandoned as useless.

In all probability the stones were transported to the circles on sledges of some kind after the cutting was completely finished at the quarry. They would be extremely liable to be damaged if they were dragged along the rough surface of the ground, especially along the uneven ironstone ridges. Most likely it was with a view to obviating such injury that the upper edges of the pillars were nearly everywhere partly rounded. It was found advisable to avoid a sharp edge, which would be often chipped or fractured when the stone was handled carelessly.

The types of pillars in different circles show considerable variation, but each circle usually comprises pillars of the same size and height, all cut in the same manner, with little difference in the form. In some circles, however, though the heights remain the same, there is considerable variety in the shapes of the pillars. One circle may consist of admirably worked stones; another, in a separate group, or sometimes in the same group, may be formed of irregularly shaped and much rounder ones, as though the work had either been handed over to an inferior artificer, or a shorter time had been allowed for its completion. I think that such variations, especially in adjoining circles, must indicate that they belong to different periods. Thus, also, the improved and really high class of work in the outer pillars seems to show that they are of later date than the circles to which they are attached; it is what one would naturally expect. In other countries it has been noticed that the stones which face a certain direction of the compass—sometimes the south—are taller than the others in the circle; but there is no arrangement of this kind in Gambia, where, as I have already noted, all the stones in a circle are almost always of about the same height.

Only three stones with other carving have been seen by me. In two instances the work consists of the channelling out of a circular flat-bottomed hollow in the level top of a pillar; a rude channel leads from one of them to the edge of the pillar, but the other had no drain of this kind. One of these cups (in a circle at Kerbach (Fig. 2)) is 5 inches in diameter, and 1 inch deep, with the drain from 1 to 2 inches wide, and about 1 inch deep; the other cup (at Barō-Fula) is 8 inches wide and 3 inches deep. The third carving is also at Kerbach (Fig. 2), in the top of an apparently broken low pillar set up between a circle and its row of outer pillars. It consists of two deep, well-cut, wedge-shaped hollows on opposite sides of the pillar, extending from the top downwards for about 9 inches, and having their thin edges pointing inwards. They seemed to me to be possibly intended to hold in position a temporary wooden top to the pillar, or perhaps, as the pillar stands close to the first-mentioned one with the cup, they might be utilized to hold on the top of the broken pillar a block of stone having a flat top on which lights or offerings might be deposited. No stone of such a shape is to be seen near it now.

The design of the sunk circle or saucer, with its channel, is, of course, well known in other countries. As in some instances in Ceylon, where it is still employed at religious festivals both by Buddhists and Hindus, to hold a lighted wick floating

on oil, its presence on the pillars must be evidence of some ceremony in which a light or lights were required. Of the two cups, one is on a pillar in a circle, the other on an independent menhir some miles distant. If these were useful at occasional ceremonies, or even annual festivals, it is probable that some similar ceremonies were celebrated at night at the other circles, at which portable lamps or lights may have been used. As the circles are burial-grounds, probably for local chiefs, it may be possible that we have here an indication that certain offerings were made to their spirits at these sites. At the present day food is offered daily by Jólās on the grave of a householder, for his use for three weeks after his death; the spirit is not supposed to frequent the grave for a longer period. No such ceremony is performed at the circles now by the later residents of the pillar districts, who do not even present offerings to their own dead. As a single lighted wick would provide an inadequate and feeble illumination, it is probable that such was not its special function; it is much more likely to have been employed as a dispeller of evil spirits. Lights are still used for this service by the Jólās. The light on the pillar would thus be expected to protect the food offering from such evil influences.

There is a low earthen mound, extending up to the outer sides of the pillars, at almost every circle; at a few, however, there is no trace of one. Some rise to $2\frac{1}{2}$ or 3 feet, but very many are under 1 foot high. Probably some of these lower ones have been raised by white ants, which have unfortunately established their nests in practically every circle, though in some instances there is no sign of them to be observed on the surface. Such ant-hills may have been covered by fresh mould for centuries; over one this had accumulated to the depth of a foot, under which was the old abandoned ant-hill, with its soil almost as hard as some kinds of stone, so that a daily progress of only a few inches in depth could be made in attempting to dig into it. There is no doubt that this general presence of ancient ant-hills in the middle of the circles is chiefly due to the villagers' custom of planting a tree there, not for its shade, but as a suitable residence for an evil spirit with whom they wish to keep on friendly terms. When the tree eventually dies, and the roots become decayed, it is certain to be discovered by the termites, which find the spot a congenial home for years. When all has been devoured, the site is abandoned until another rotten stump is ready for them.

The total number of independent stones which I have discovered and classed as menhirs (Fig. 1) is 64 in the part of the pillar-tract through which my exploration extended. This stretched from Balangār, in the west, up to Niāni-Marū 27 miles to the east. Beyond this point, I heard of so many more circles in our Protectorate that I believe the total will amount to more than 100. It was a matter of regret to me to be obliged to abandon the examination of these additional circles and the menhirs that are doubtless also set up in that part of the district; but want of time necessitated it, as it was requisite for me to pay at least a short visit to Fonyi,

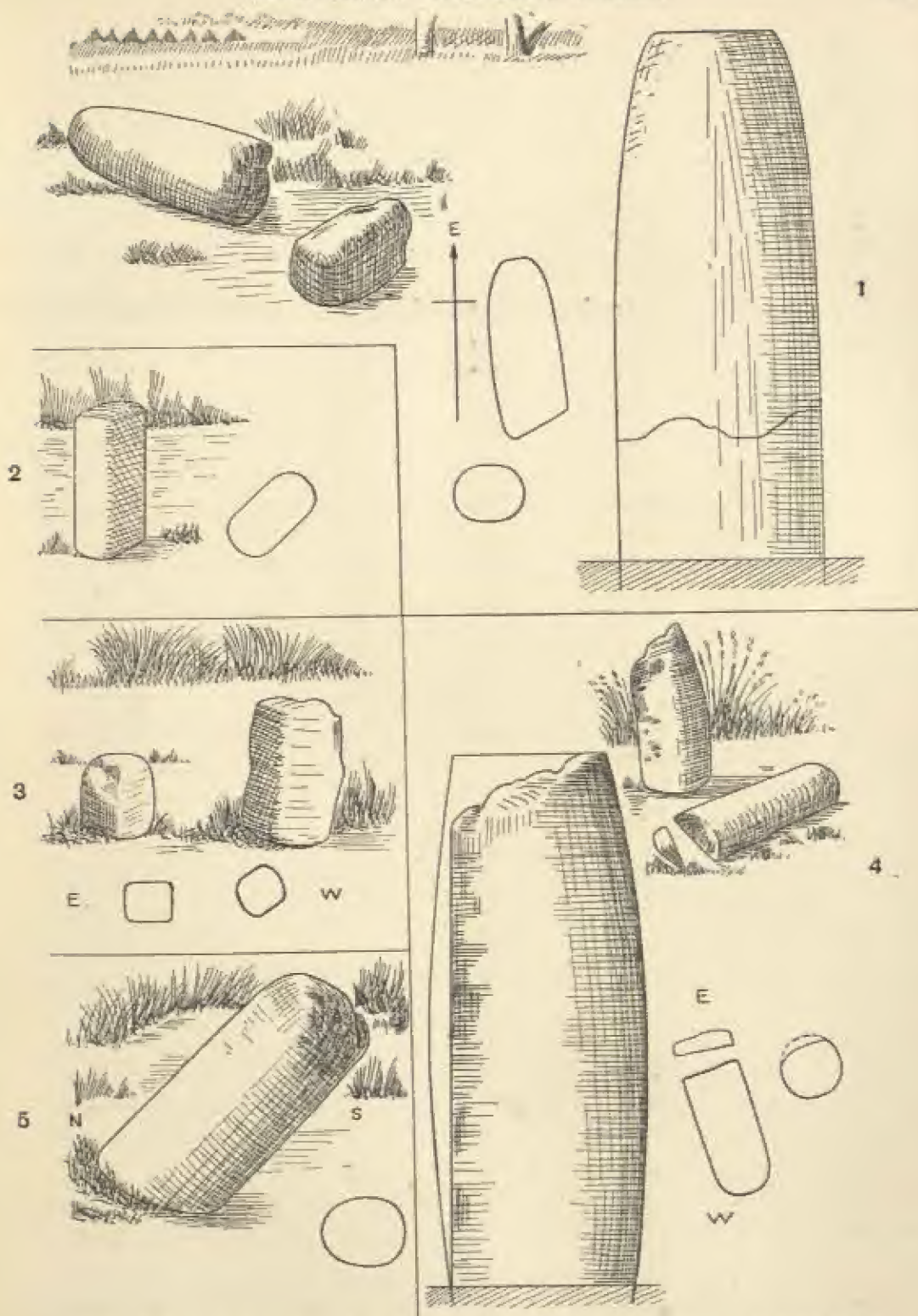


FIG. 1.—1. NJAU MONOLITH. 2. NJAMA. 3. NR. PANCHAN. 4. —. 5. SANGUI-JÖR.
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the Jōlā tract.¹ As it is, however, I have examined and measured so many circles, as well as menhirs, that it is improbable that new important types of either kind would be forthcoming had I been able to prolong my investigations.

In all, I have detailed measurements and sketches of 66 menhirs and 71 circles (one being a double one), of which four were examined and roughly measured by me on a former visit to the Gambia. The menhirs are often in pairs, but many single stones also occur, and in a few instances three are arranged in a line. Their usual length is 6 or 7 feet; the longest measures 10 feet 3 inches, of which perhaps 2 feet or more would be underground. Many menhirs are well-cut cones, truncated and partly rounded at the top; others are of square or elliptical cross-section. One small tapering square, one only, ends in a pyramidal point; owing to the decay of the stone it is not certain that this is altogether artificial. All with oblong sides have flat tops.

In the circles actually examined, measured, and sketched, there are 1266 circle stones and 275 outer pillars, being an average of 18·14 stones in each circle, and 4 outer ones. The smallest circle is only 6 feet wide between the inner faces of the pillars; the largest of these measures 24 feet 6 inches in diameter. The following table shows the varying number of stones in the circles themselves:—

No. of Circles.	No. of Stones.	No. of Circles.	No. of Stones.	No. of Circles.	No. of Stones.
1 ...	6	3 ...	14	3 ...	21
1 ...	7	4 ...	15	1 ...	22
1 ...	8	6 ...	16	4 ...	23
3 ...	9	2 ...	17	3 ...	24
13 ...	10	2 ...	18	1 ...	29
9 ...	11	4 ...	19		
3 ...	12	3 ...	20		

Although so many possess ten pillars, the number of examples is perhaps insufficient for any definite conclusion regarding the early employment of a decimal notation to be based upon this interesting fact. It is possible, however, that out of the nine circles which have eleven pillars, several may have had ten originally, an additional one having been inserted at a later date, as appears to have been the case in other circles. Thus, if we add nearly half the number with eleven pillars to those with ten, we shall have a piece of valuable contemporary evidence regarding the early people's counting by tens. This might be presumed, in any case, but it is important to obtain actual figures which tend to confirm the deduction. Like the other inhabitants of the Gambia Valley, the modern Jōlās count by tens, which are termed "hands," and twenties or scores, called "person"; this is confirmatory of the deduction that I have made regarding the prehistoric counting.

¹ I expected to find about thirty circles and a very few menhirs. I estimated that two and a-half months would be required for their examination, and an equal time for studying the Jōlās.

The evidence afforded by the dimensions of the pillars in the circles is not so clear. A very large number of stones have sides or diameters from 1 foot 5 inches to 1 foot 6 inches wide, and this may have been intended for the measure of the ancient cubit. At the same time, there are perhaps quite as many pillars with sides or diameters from 13 inches to 15 inches across. Of course, in the case of the ironstone of which the pillars consist, it would often be necessary, on account of chipping or flaking, to reduce the cross-section to a smaller area than had been intended. The larger types of pillars are often from 3 feet to 3½ feet in diameter.

It is certain that the cutters of the stones had no strictly defined limits for the dimensions of the pillars, except that in numerous circles there is an adherence to the same lengths, and approximately to the other measurements, while at adjoining circles the cross-sections and even the whole type of the pillars may be different. This naturally points to the construction of such circles at a different period, when other stonecutters were at work. Those who have employed many stonecutters in the East will have observed that each man, if left to his own devices in the quarry, prefers to deal with stones of certain sizes only. He finds that he can make better progress with dimensions that he knows well than with new sizes to which he is not so completely accustomed. Judging by the results, this appears to have been the experience of the carvers of these pillars. The measurements across the circles are too irregular to furnish any useful information. Forty circles out of sixty-eight, that is, considerably more than half, vary from 15 to 19 feet in diameter at their inner faces. There are only fifteen circles, from 16 to 18 feet in width, which must include multiples of the fathom. I have not investigated the details of the heights of the pillars, as it is quite uncertain to what depth they are sunk in the ground, nor how much soil has accumulated round them since they were fixed.

There is overwhelming proof of the importance attached to the orientation of the circles, in the fact already alluded to, that with perhaps one exception, the outer pillars are set up outside the eastern part of the circle. All the outer pillars are doubtless of later erection than those of the actual circles, but probably they fulfil the same function, as memorials or tomb-stones of the dead person in whose honour each was erected. Where there is a pointer-stone, it is nearly always in an easterly direction, and commonly much further away from the circle than the outer pillars. Its position to the east indicates that some ceremony in honour of the sun was performed. On such a festival morning the sun would appear for a moment or two, after it rose, to be resting on the summit of the stone. It is rather strange that, so far as I am aware, the modern Jōlās do not actually worship the sun, but confine their notice of it to a respectful morning and evening salutation. A longer stay than I was able to make among them might reveal some further signs of devotion to it.

Considering the large number of pillars of an elliptical cross-section, it would not have been surprising to meet with some pillars set up in ellipses, but these are entirely absent. Only a circular arrangement of the pillars has been made, perhaps

by way of forming a round magic fence to shut out evil influences, which might have an injurious effect on the soul of the deceased. At the present day such circles are described on the ground by the Jólās in the case of various ceremonies in which it is important to exclude evil influences; the celebrant remains inside this magical protective diagram.

§ 3.

The method adopted by me in measuring the circles was as follows. As a preliminary, it was always necessary to cause the site to be cleared of all the tall grass, creepers and weeds which covered it. This occupied one day, including the burning of this rubbish, or, with the first examination of the site and issuing the needful instructions regarding it to the village head-man, often a day and a half.

It was then necessary to define and mark out an approximate centre of each circle, and if there were several circles in proximity, to connect and fix their relative positions on a skeleton plan. For finding the centre of a circle, the middle point of a line between two opposite upright stones was marked on the ground, and also the middle of a similar line at about a right-angle to the first one. The mean point between these two was then accepted as the approximate centre of the circle, it having been found that additional measurements of this kind did not appreciably affect the position of the centre of what was in any case not an actual circle.

Through the centre thus obtained an east and west line was then marked on the ground, and a north and south line across it. These divided the circle into four equal sectors. The positions of the pillars were then marked on a rough plan of the circle, and they were numbered in Roman figures, both on my field plan and on a table near the side of the same sheet.

The measurements were taken from the east line, usually progressing towards the right. They consisted of (1) the distance from the central peg to the inner face of each pillar; (2) the width of the opening between each pair of pillars; (3) the height of each pillar above the ground level, or its total length if prostrate; (4) the tangential width of each pillar, that is, on a line passing through its centre along the circumference of the circle; (5) the radial thickness, that is, the thickness of the pillar on a line at right angles to the last; (6) the positions and dimensions of the outer pillars; (7) the diameter and height of the mound in the circle, noting what species of tree was growing on it. When the pillars were not too wide to be spanned by my large callipers, each of the two diameters or widths of the pillars was measured three times—at the top, the middle, and the bottom, it having been ascertained that there was often either a slight enlargement from top to bottom, or a bulging out in the middle, causing a slight, or even a considerable, vertical curve in the outline. In the case of pillars of large diameter, more than 2 feet 6 inches, I was often obliged to trust to one tape measurement across the top. The circumference commonly could not be utilized, since many of these pillars were either scaled on the surface or were not of circular cross-section. All except the ground

measurements were entered in columns in a table at the right side of the sheet, where also were recorded some condensed notes of the shape and state of each pillar, and whether its top was level or raised in a curve. The whole particulars thus contain a complete record of the state of each circle, and of each stone in it. All dimensions were taken to the nearest half-inch. The calliper compasses were applied to the pillars by a Mandinka "boy" (a young man), who, although not otherwise particularly intelligent, became most expert and accurate in this work. The measurements were all made by myself. These particulars have been embodied where possible in the drawing of each circle, so that the variations in the diameters may be examined, and the slightly tapering sides or conical, or often cigar-shaped side curves of the outlines may be observed. Since for the vertical outlines my sketches must be depended upon, this was a point to which I paid particular attention, special drawings being made of some of the more interesting outer pillars, in order to illustrate the vertical curves in their sides.

In the case of the conical pillars I found it advisable to take two diameters at each foot in height, in order to obtain an accurate record of the vertical curves of the sides, which are rarely quite straight. The lower part of many cones is thus shown to be vertical, that is, the whole stone in such cases is of a cigar shape. Very short cones are usually round-topped.

In describing the shapes of the cross-sections in my notes, it was soon found necessary to define the varying forms, and the following terms have been adopted: Square, oblong, oblong with rounded ends, flat or broad ellipse, circle, oval and D-shape. The oblongs with rounded ends only differ from flat ellipses in having straight or practically flat sides; it was often difficult to decide which term should be applied in the case of some of the larger ones, as one form runs imperceptibly into the other. The D-section may have been given to pillars that were intended to be circular. If, in cutting such a stone, a flake broke off one side, the stonecutter in order to preserve the symmetrical appearance would slice off the whole of that part of the pillar, converting the section into a D-shape. Where several stones had been thus altered in form, others probably were cut in the same manner for the sake of uniformity, and therefore at some circles we find that every pillar has this peculiar cross-section. But, as a general rule, the stones of this type are mixed up indiscriminately with those of the other shapes. The flat side of the D often faces inwards, but also in other cases outwards, as well as in intermediate directions.

Many stones which have a circular cross-section are of a distinctly barrel shape, some being considerably bowed out at the middle. Such a form is common among the large outer pillars, but it also often occurs in those of the circles themselves. A few barrel-shaped pillars have a D-shaped cross section, the flat side being quite straight. I believe that the barrel form was adopted, like the rounding of the upper angles, in order to avoid the chipping or fracture of these angles; when the stone was lying on the ground they would thus be raised some inches above the

soil or rock over which it was rolled or drawn. The slight swelling or bulging of the vertical sections of the cones and other pillars would have a similar protective result. It is not necessary to suppose that this bowing outwards of the sides was specially adopted for the same reason as that of the Greek column, that is, in order to obviate a hollowed appearance in the sides. The pillars are too short to really need it, although in the case of the higher cones the artistic effect is appreciable.

I can offer no explanation of the carving of the large number of pillars with elliptical cross-sections, unless it was owing to the shape and size of the block of stone with which the stonecutter was dealing. If the slab were too thin to permit the carver to cut a circular or square pillar of satisfactory thickness, he might still utilize it by giving the pillar an elliptical or oblong section. The oblongs with rounded ends—the cartouche form—may have been at first intended for ellipses. If any flaking of the stone occurred at the side, the trimming which would then be requisite for bringing the surface to one level again, if repeated on the opposite side, so as to retain the balance of the design, would convert an ellipse into a round-ended oblong. The oval shape of a small number of stones may be due to chipping or scaling near one end of the ellipse in an elliptical pillar. In such a case the carver might reduce the size at that extremity of the cross-section, and convert the section into an egg-shaped one.

If these conjectures regarding the carving of the pillars be correct, the original or intended shapes of the cross-sections are reduced to four—the square, the oblong, the circle, and the ellipse. In elevation the forms are: the barrel, the cone, the cigar-shape (of which the lower third has vertical sides, and the rest is the frustrum of a cone), the cylinder, the rectangular pillar or hexahedron (of four sides and two ends), and vertical-sided pillars with the other cross-sections. There are no three- or four-sided pyramids, or octahedrons, or decahedrons, that is, pillars having six or eight sides and two ends.

For laying down on a plan the positions of three circles of varying sizes that are in a row at Kucha, I first marked the middle of each circle, and set up at each centre a straight millet stem, as a surveying pole. On stepping back to look along this line, I was astonished to discover that it was so accurately straight that the two distant stems were completely hidden by the near one. Even if, by taking the middle points of several more diameters in the circles, the positions of the centres were slightly altered, so as to move the stem at the middle circle out of the exact line to the extent of an inch or more, the result still would be surprising. No other circles are ranged so accurately in line, yet it is practically impossible for the exactitude to be accidental.

Human remains have been found inside the few circles at which excavations were made. As the bodies were close to the pillars, it may be assumed that these were erected, like those at the Cross River, as memorial stones or tombstones of the

buried person, who usually is not likely to have been other than the village chief, or a member of his family. The common people's graves had no memorials; there are no other mounds to be seen at the villages but those of the circles.

From the fact that at many circles every stone is of one type, often a special one, such as those with D-shaped or elliptical cross-sections, and that no unfinished inner circle, excepting one doubtful example, occurs, it would seem that at least in some instances the stones of the whole circle were set up at the same time, which might be on the occasion of the first interment. This would enable the people to utilize the services of the stonemasons while they were available on the spot. This is the more probable since it is certain that there was never a large force of these artisans in the country, there being no other cut stones in it. In other circles the varying shapes of the pillars may indicate that the work was not simultaneous, but that different carvers were employed to commemorate later interments.

It is quite evident that the outer pillars were erected one by one, after the circle itself had been completed. The first was fixed to the east of the centre of the circle; later ones were added on each side of it, or occasionally to the south of it, sometimes in a straight line running north and south, in other places working in a curve round the outside of the completed circle, so as gradually to form a second or outer circle. All stages of this construction are to be seen, from a single outer pillar to a finished outer circle, as well as one in which two or perhaps three stones are still required for its completion. When the outer pillars were set up in a straight or nearly straight line, this in time tended to stretch beyond the width of the circle. In such a case a second line parallel to the first one was begun to the east of it. This is always shorter than the first one, as though still unfinished. There is no example of a third outer line.

While the burials represented by the pillars were apparently at some circles confined to the chiefs themselves, at others it is evident that the stones commemorate the interments of other persons also. These may have been sub-chiefs of some kind, or otherwise some influential members of the chief's family, or his near relatives. When two circles are formed at a site, closely adjoining each other, we do not know if they are memorials of a single line of chiefs or of two. Judging by the small number of outer pillars at some of these, they might represent chiefs belonging to two different families, if the succession to this post was confined to a single family so long as suitable persons for it were available, and in default of them was transferred to another.

The numbers of the pillars set up at certain circles may afford some evidence of interest in this respect, and to a certain extent be useful in enabling us to form some idea, necessarily a vague one, of the time occupied in the construction of some

of the circles. Thus, there are the following large numbers of pillars at some circles :—

Pillars in Circle.	Outer Pillars.	Total.	Pillars in Circle.	Outer Pillars.	Total.	Pillars in Circle.	Outer Pillars.	Total.
10 ...	11 ...	21	19 ...	5 ...	24	19 ...	9 ...	28
17 ...	4 ...	21	23 ...	2 ...	25	20 ...	9 ...	29
16 ...	5 ...	21	14 ...	11 ...	25	24 ...	5 ...	29
16 ...	5 ...	21	22 ...	4 ...	26	23 ...	8 ...	31
16 ...	6 ...	22	19 ...	8 ...	27	21 ...	11 ...	32
20 ...	3 ...	23	21 ...	6 ...	27	20 ...	4 ...	33
23 ...	— ...	23	20 ...	8 ...	28	11 } ...	10 ...	36
16 ...	7 ...	23	24 ...	4 ...	28	* 15 } ...	19 ...	37
24 ...	— ...	24	23 ...	5 ...	28			

* Outer circle (complete).

So far as is known, the constructors of the circles were the only residents in this district. Their neighbours in early prehistoric times are believed to have been the Serère people, who are looked upon by the present inhabitants of the valley as being racially almost identical with them originally. The expression applied by Mandinkas to the Jólás and Serères is that they are *bē kilān*, "all one," and this was confirmed by the Wolofs. I met with no tradition of any ancient feuds between the two races; it would therefore appear that the circle builders would have little to fear on account of wars or raids before the Wolof invasion. Hence we may expect that there would be no abnormal mortality among them, and in that case it may be allowable to attribute to them an average life as chiefs equal to the average reigns of kings in other countries, that is, fifteen years; but I also note the ages of the circles with a rate of twelve years for each pillar.

When we apply this estimate to the number of pillars in the preceding table, we have at one end of the scale 315 years and at the other end 555 years, if each pillar commemorates only a village chief. At the twelve years' rate the numbers become 252 and 444. This is such an extreme variation that it may be presumed that in these instances other persons are also represented by the pillars. In the case of the circles with the smallest diameters, and those with the smallest total number of stones, from nine to fifteen, however, it would be unsafe to adopt this conclusion. In these last examples with nine and fifteen pillars, the number of years, reckoned at fifteen per burial, that is, per pillar, will be 135 and 225 respectively, and at twelve years 108 and 180.

If, again, we consider the larger groups of circles, it is quite clear that the members of various families are represented. At the most westerly village at which circles occur, called Gunkuru, there are two groups, one, with two circles, being close to the houses. The other group is about a third of a mile away or more from the

village; it consists of six circles, of which five are close together. The details of the two groups are as follows:—

No. of Circle.	Diameter.	Pillars in Circle.	Outer Pillars.	Totals.	Totals × 15.	Totals × 12.
	ft. ins.					
1 	11 8	21	2	23	345	276
2 	14 0	20	8	28	420	336
3 	12 0	15	—	15	225	180
4 	18 5	20	9	29	435	348
5 	12 6	15	—	15	225	180
6 	14 10	23	2	25	375	300
7 	15 3	24	7	31	465	372
8 	16 8	20	3	23	345	276

Inspection of this table shows that if, as is likely, the two circles near the village were first established, the others were constructed before all the space immediately surrounding them was occupied, there being only two outer pillars at one of them. After these two were formed, partly or wholly, the land near them may have been reclaimed and brought under cultivation. As such very inauspicious places as cemeteries would never be allowed in the cultivated lands, at a time when other burial grounds of this kind were required, a site was selected for them beyond the fields, and close to the ironstone ridge at which the stone could be quarried. The fact that the total outer stones at four of these presumably somewhat later circles are only five in number also shows, like the two first ones, that circles were set up while the ground round others closely adjoining them was still available for interments. As we cannot suppose that all belonged to the family of one chief, nor that there were eight separate lines of chiefs in this village, each of which had its private burial ground, the most probable conclusion in this and other cases where considerable numbers of circles occur together is that several influential village families, or their heads, are represented in these memorials, in addition to the line of chiefs. The states of other groups support this conjecture.

At Kerbach (in Wolof, Ketbaty), there are nine circles together, close to the village, in one long line (Figs. 2—5). From east to west these consist of the following numbers of pillars:—

No. of Circle.	Diameter.	Pillars in Circle.	Outer Pillars.	Total.	Totals × 15.	Totals × 12.
	ft. ins.					
1 	16 0	10	3	13	195	156
2 	16 6	11	3	14	210	168
3 	17 0	18	10	28	420	336
4 	8 6	{ 11 *15 }	10	36	540	432
5 	15 0	14	5	19	285	228
6 	15 6	10	11	21	315	252
7 	14 0	9	3	12	180	144
8 	18 6	10	4	14	210	168
9 	18 6	10	2	12	180	144

* Outer circle (complete).

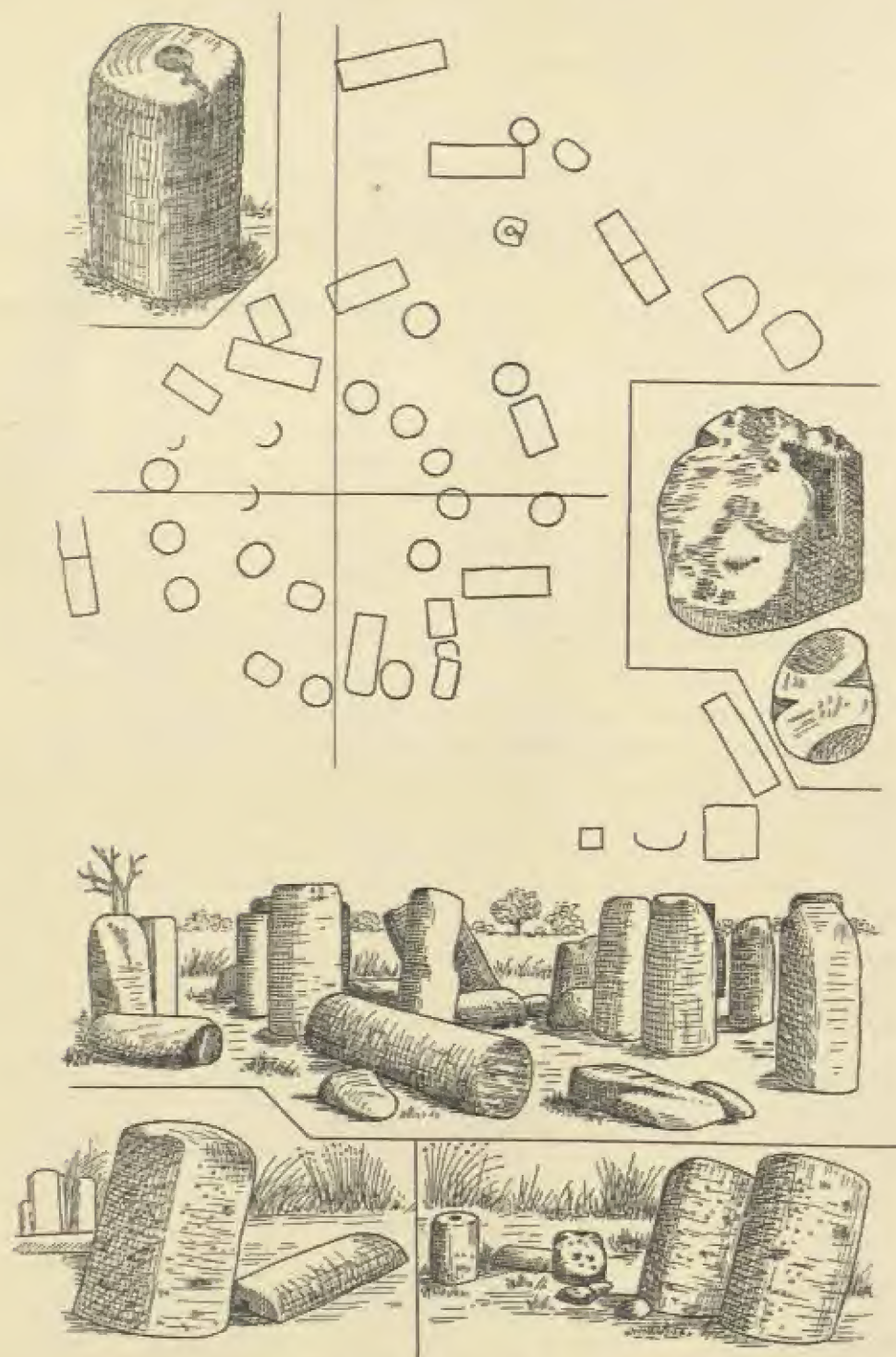


FIG. 2.—KERRACH, DOUBLE CIRCLE, NO. 4. (See p. 201.)



THE OUTER PILLARS.

FIG. 3.—KERRACH, NO. 6. (See p. 201.)

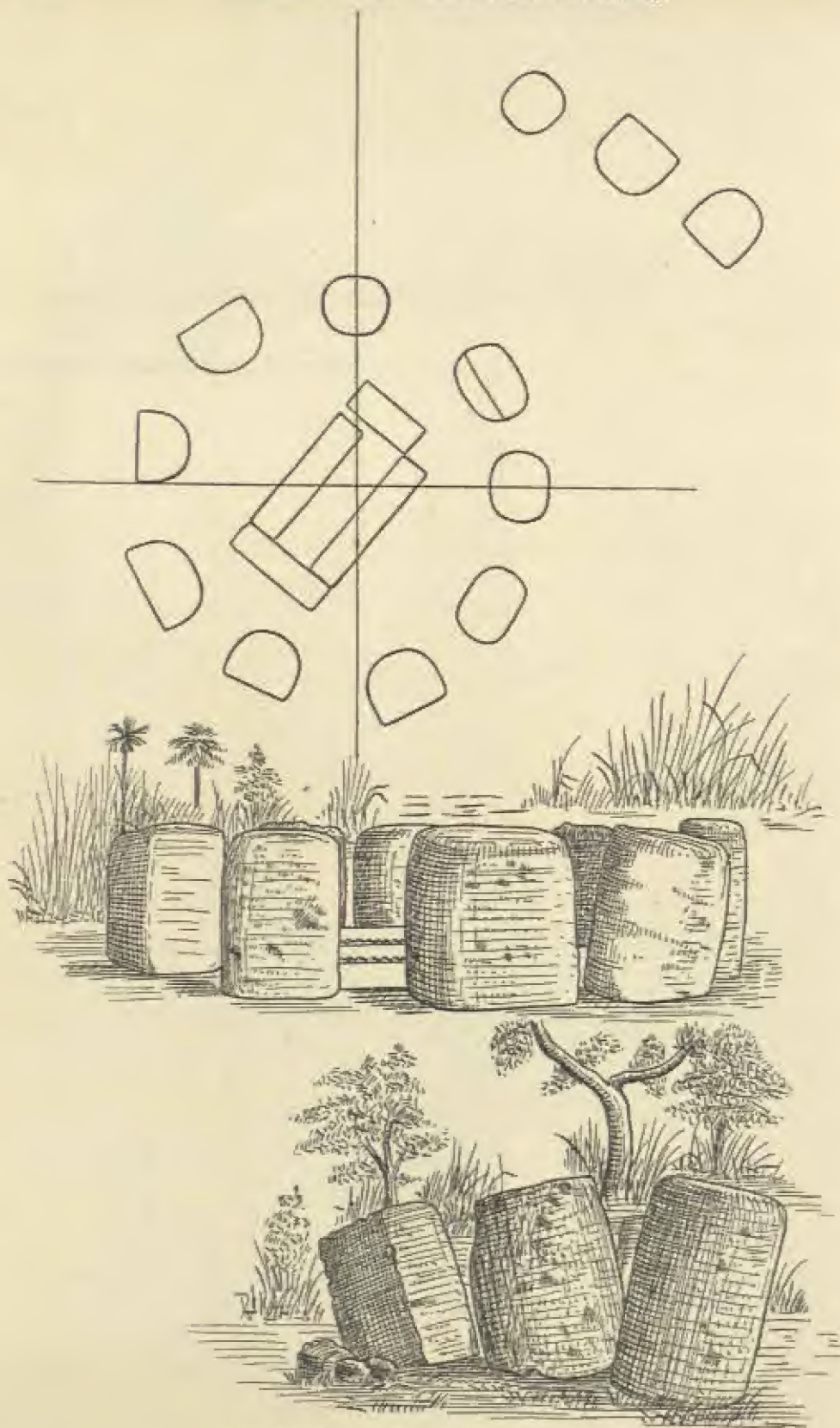


FIG. 4.—KERRACH, NO. 7. (See p. 201.)

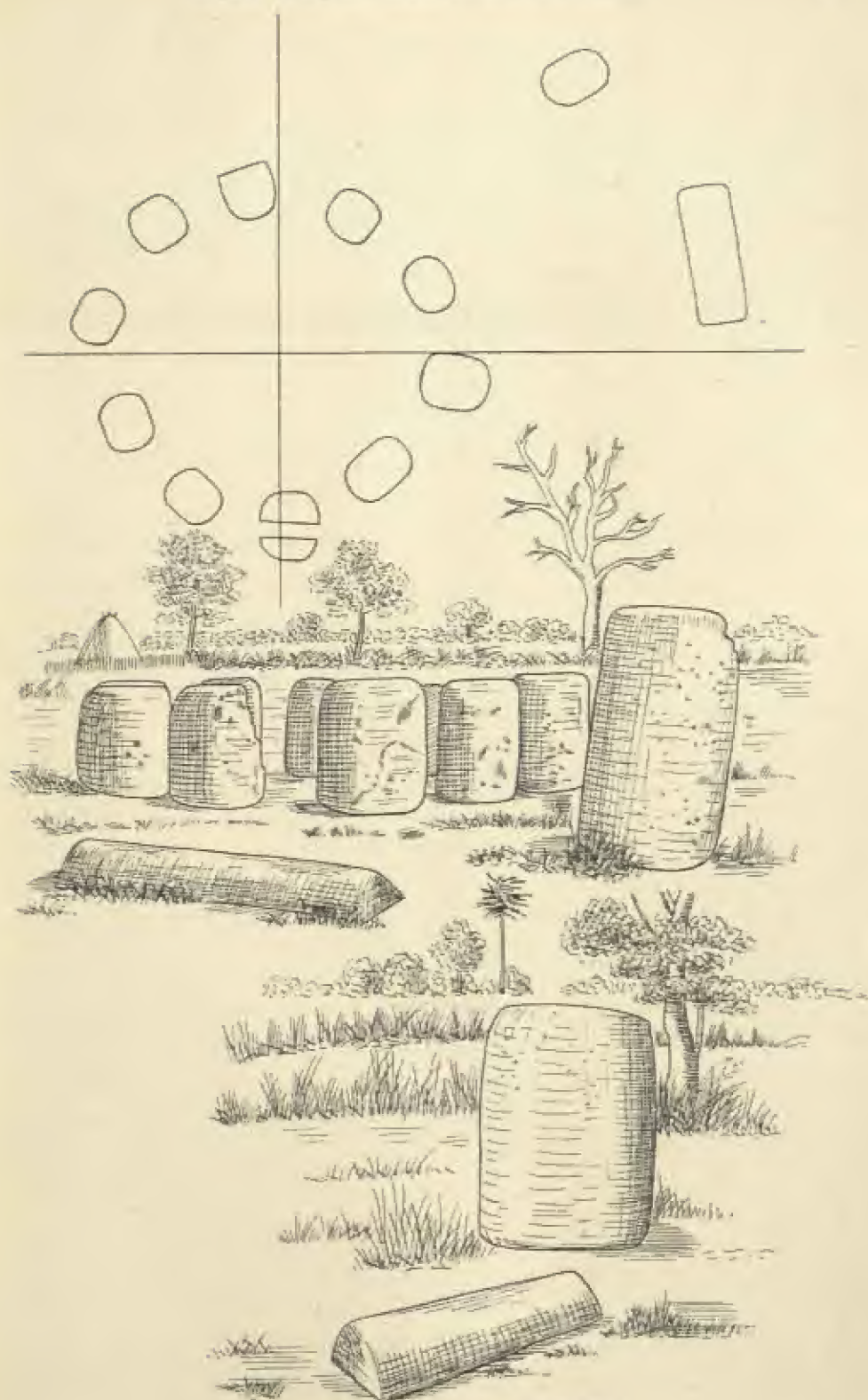


FIG. 5.—KEBBACH, SO. 9. (*See* p. 201.)

It would seem here that the four circles numbered 3 to 6, with the largest number of pillars, were the earliest, and that the five terminal circles may belong to a later period, the line being extended at each end to receive additional burials. The numbers of the outer pillars are in accordance with this view. At fifteen years per pillar, the construction of the circle numbered 4 would occupy 540 years; at the twelve years' rate this would be 432. This is so much longer than the time required by the others that it shows that other persons than the village chiefs were interred at that circle, at least.

At Sanguli-Jōb there are seven circles together, adjoining the village, in two lines of three and four circles. The particulars of them are as follows :—

No. of Circle.	Diameter.	Pillars in Circle.	Outer Pillars.	Totals.	Totals × 15.	Totals × 12.
	ft. ins.					
1 	23 0	10	9	19	285	228
2 	14 0	10	4	14	210	168
3 	23 0	12	4	16	240	192
4 	18 0	10	4	14	210	168
5 	24 6	21	11	32	480	384
6 	22 6	23	8	31	465	372
7 	23 6	22	4	26	390	312

Judging by the numbers of pillars and their proximity, the last three circles seem to be older than the others, and it is noteworthy that the type of their pillars is inferior to that of all the others in this group. This is especially the case in the last two, where they are very short, square in section, and roughly cut, and also are much eroded, some of the outer pillars having crumbled into mere heaps of gravel. In the circles numbered 1 to 4 the stones differ in shape from these, many being barrel-shaped. It is probable that the first four circles commemorate only chiefs or heads of families.

At Kueha there are three circles in a straight line, and one (No. 4) a short distance to the north of it. Their particulars are :—

No. of Circle.	Diameter.	Pillars in Circle.	Outer Pillars.	Totals.	Totals × 15.	Totals × 12.
	ft.					
1 	17	11	4	15	225	180
2 	21	16	5	21	315	252
3 	18	16	6	22	330	264
4 	14	14	4	18	270	216

According to this table, the four circles may be of nearly the same age, that numbered 1 being perhaps the latest. Thus, they may have belonged to four different families, the head-men of which were buried at this spot. If all represented only consecutive village chiefs, their construction would extend to 1140 years at the rate of 15 years' rule for each man, or 912 years if we allow 12 years for each person.

At Budu there are four circles arranged in two parallel east and west rows of two each (Figs. 6—9). Their details are as follows :—

No. of Circle.				Diameter.	Pillars in Circle.	Outer Pillars.	Totals.	Totals × 15.	Totals × 12.
				ft. ins.					
1	...	...	...	15 6	10	6	16	240	192
2	...	...	...	15 6	10	8	18	270	216
3	...	...	...	11 6	8	—	8	120	96
4	...	...	...	14 9	16	1	17	255	204

The circles numbered 1 and 2 consist of fine, wide, well-cut stones, mostly of a distinct barrel-shape, and they may be of about the same age. The small one numbered 3 is of a different type from the others, and is almost the only circle in which several stones in the ring itself are of a conical form, this type being usually confined to menhirs and pointer stones. This circle may thus belong to a different date, and is possibly later than the others. It cannot be supposed that such a circle, consisting of only eight stones, was constructed for the use of all the members of a family, and it may be accepted as tending, like some others, to show that certain circles, at least, were established for the interment of only a line of village head-men, or for only the heads of important families. If the stones of these four circles be memorials of consecutive chiefs only, they would in all extend over a period of 885 years at the rate of 15 years each, or 708 years at 12 years each.

At Sampaso there is a similar group of four circles, arranged in two parallel pairs (Fig. 10). Their details are as follows :—

No. of Circle.				Diameter.	Pillars in Circle.	Outer Pillars.	Totals.	Totals × 15.	Totals × 12.
				ft. ins.					
1	...	...	...	13 8	11	3	14	210	168
2	...	...	...	14 3	11	4	15	225	180
3	...	...	...	14 6	9	6	15	225	180
4	...	...	...	18 0	11	1	12	180	144

Like those at Budu, it would seem that these are nearly contemporary, the last one, with only one outer pillar, being probably of subsequent date to the rest.



FIG. 6.—RUDU, NO. 1. (See p. 207.)

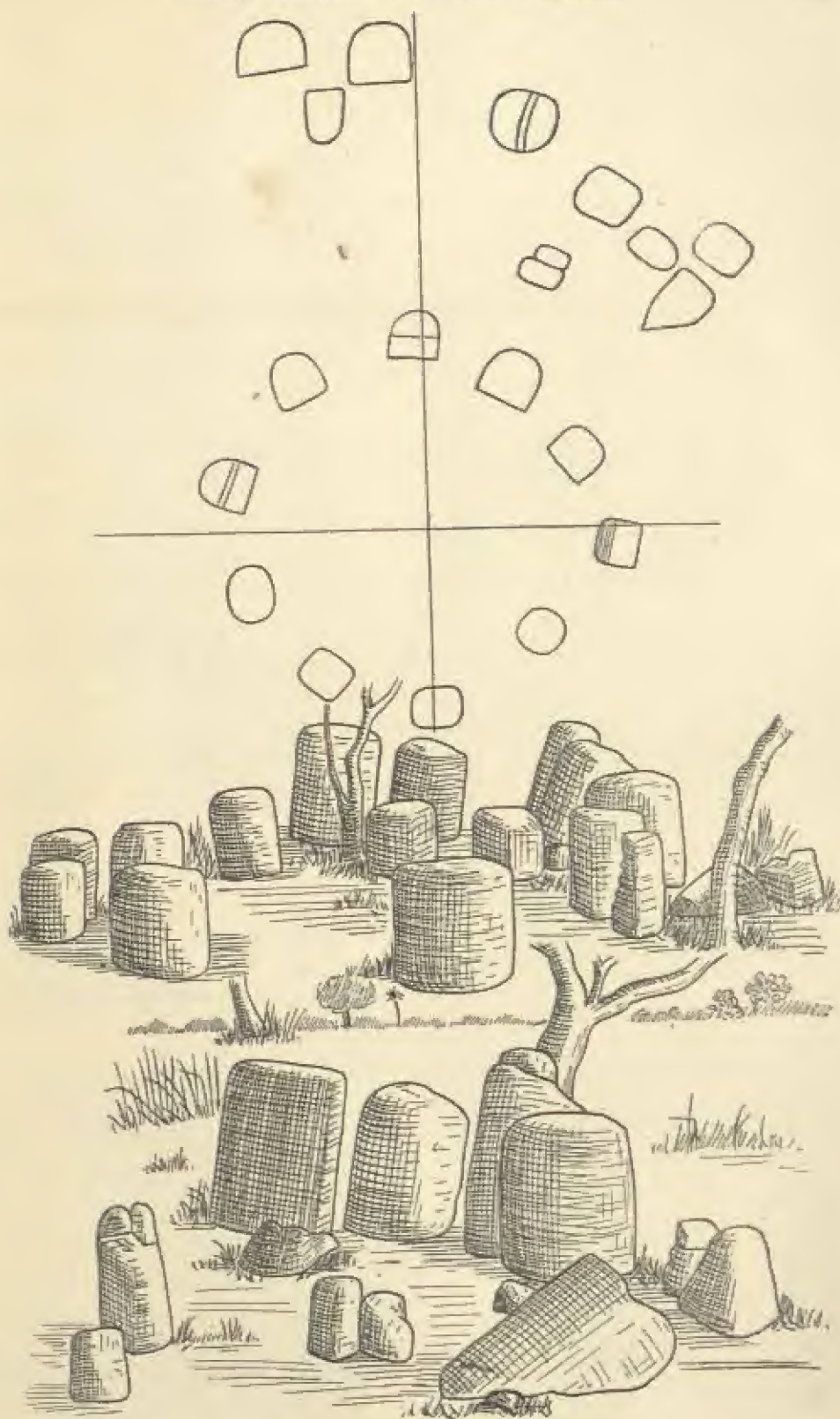


FIG. 7.—HUGU, NO. 2. (See p. 207.)

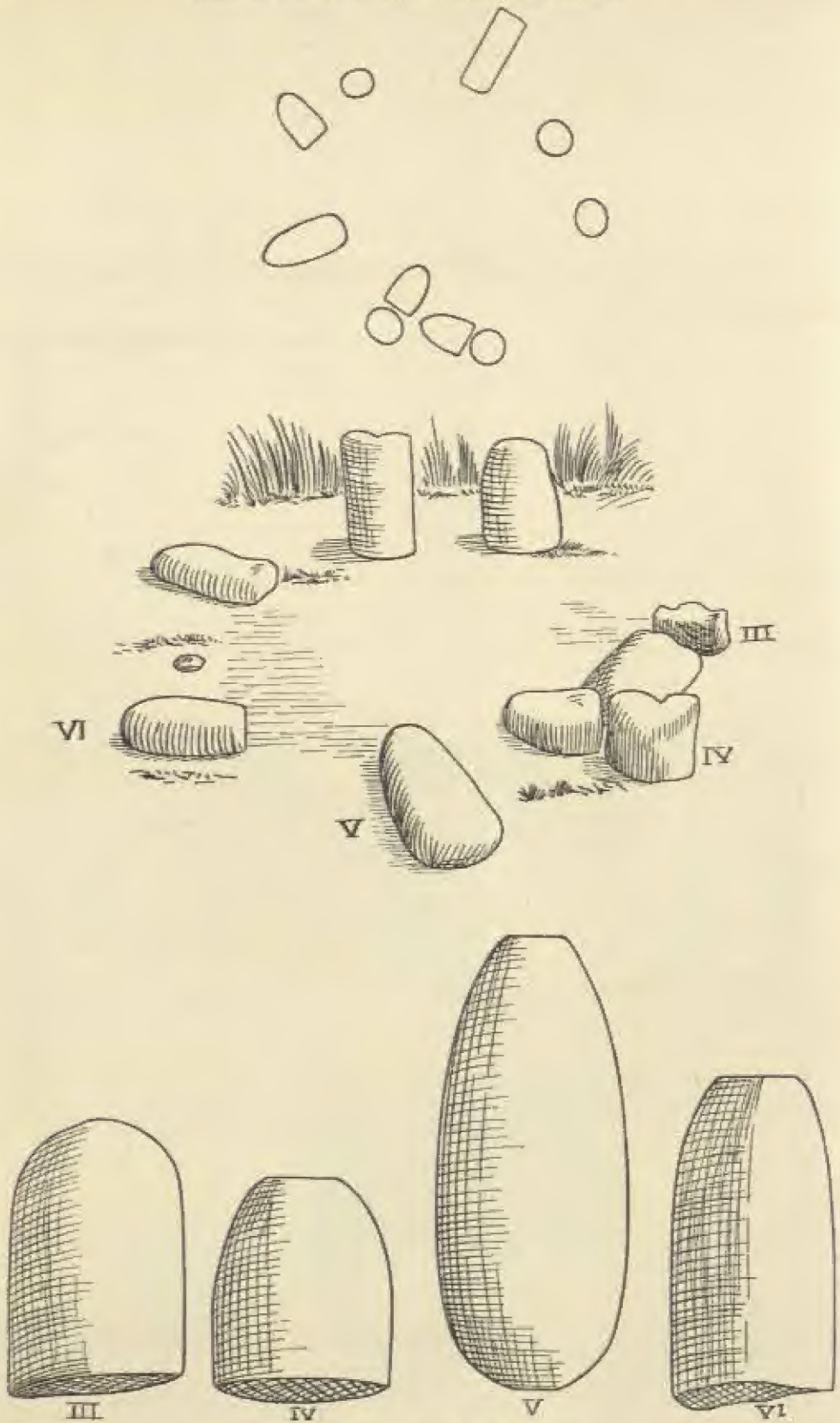


FIG. 8.—BUDU, NO. 3. (See p. 207.)

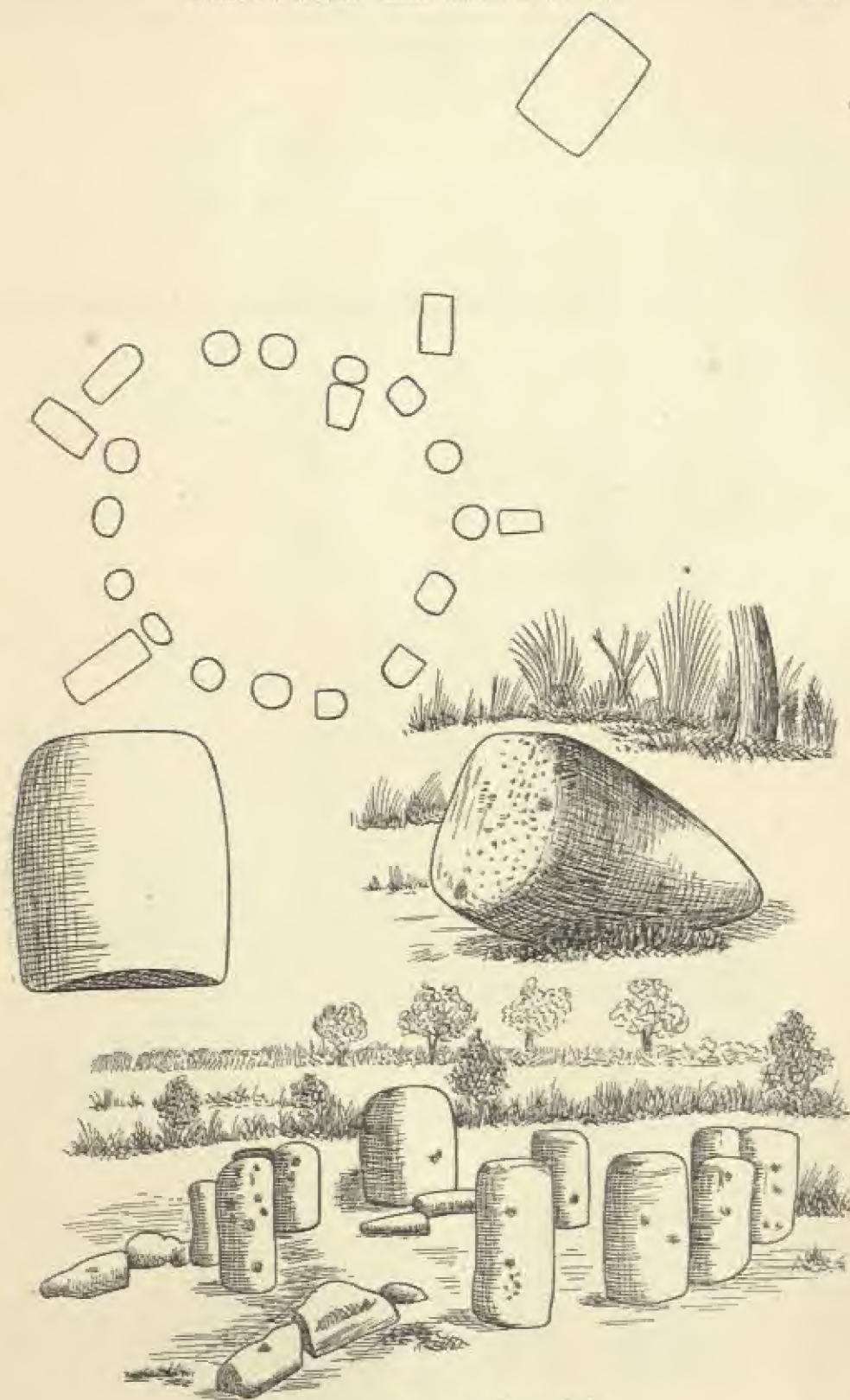


FIG. 9.—BUDU, NO. 4. (See p. 207.)

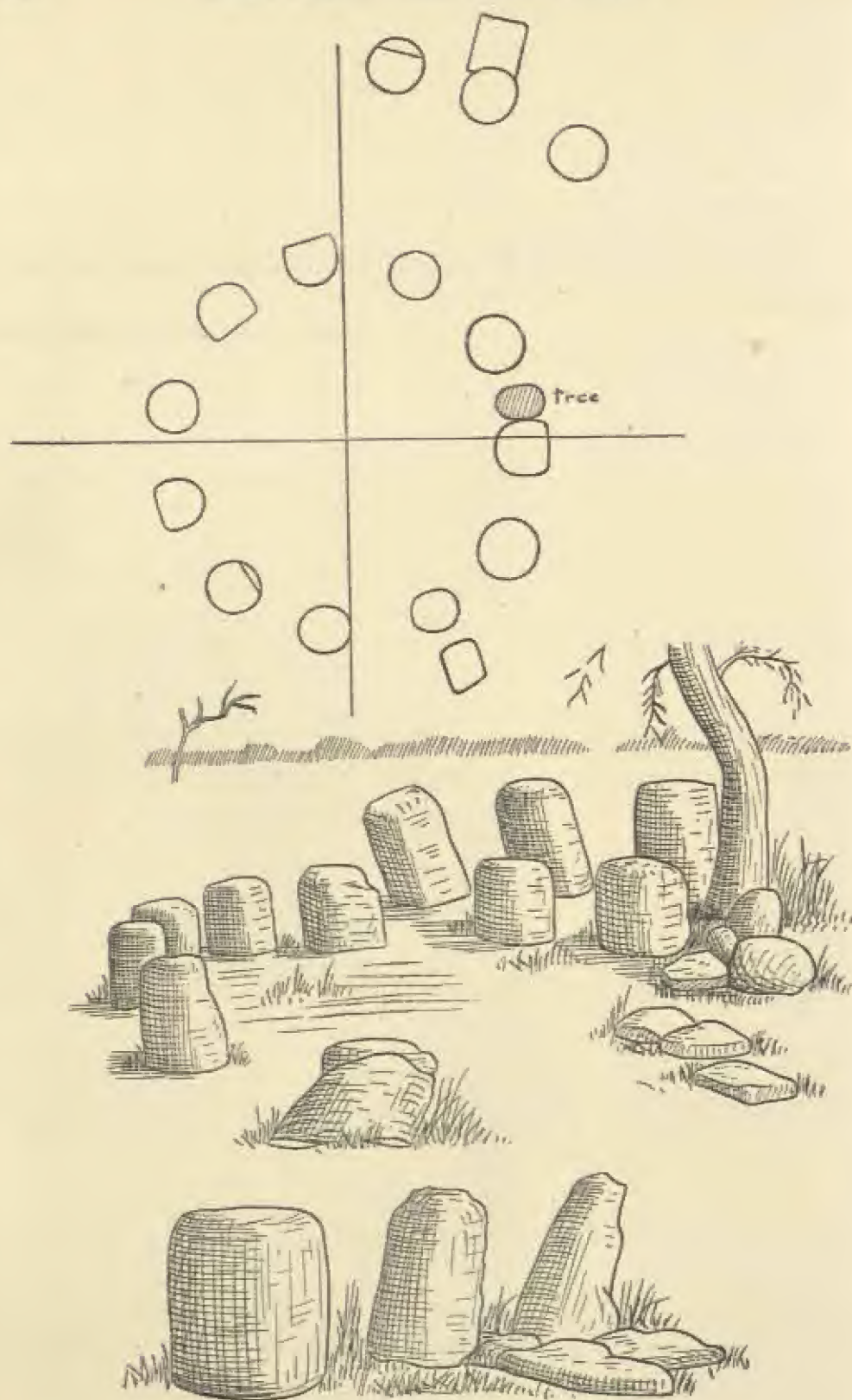


FIG. 10.—SAMPAGO, NO. 1. (See p. 207.)

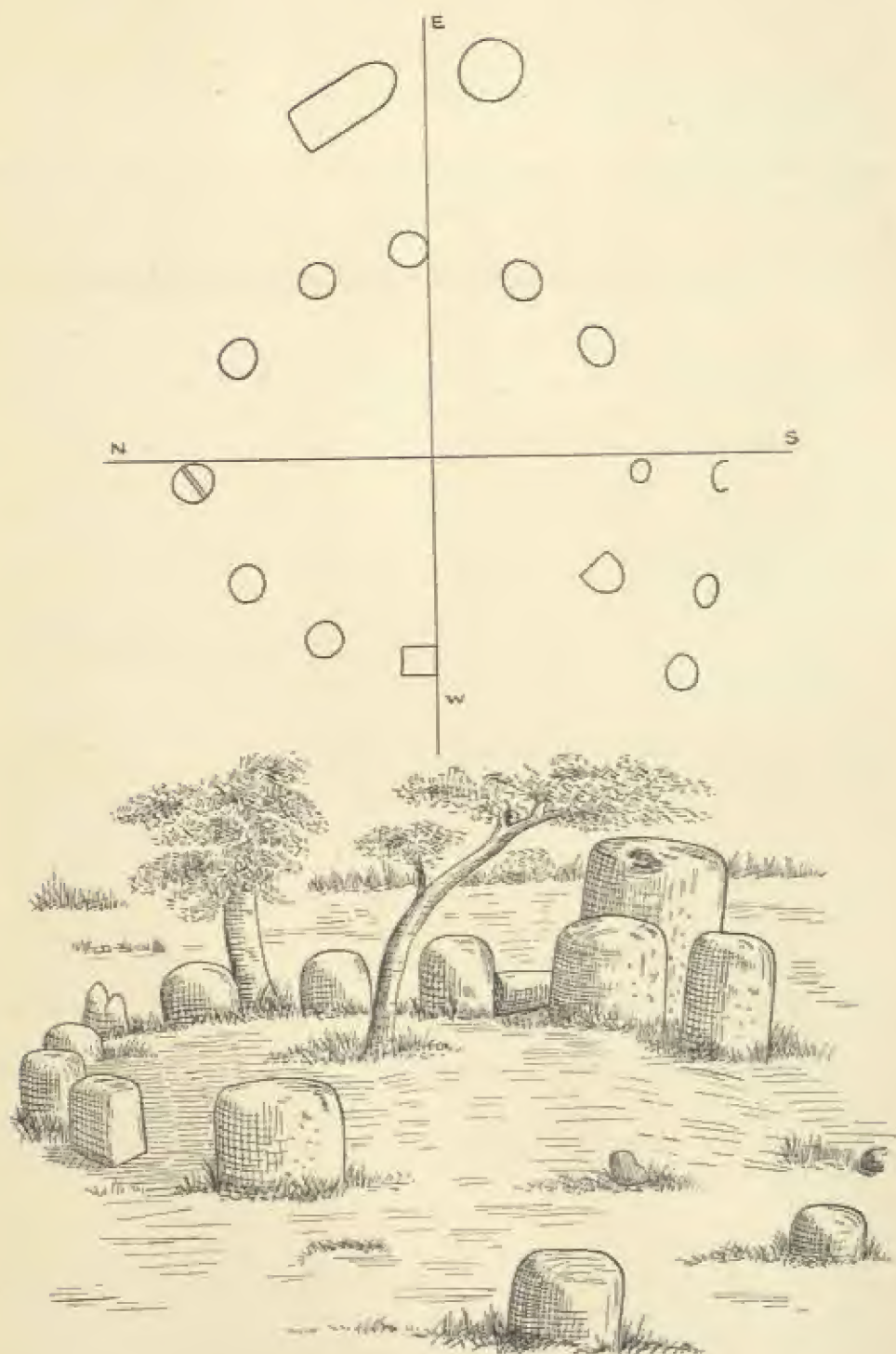


FIG. 11.—SIANI-MARU. (See p. 214.)

Apparently they commemorate only the head-men of the village or family. If all be memorials of only a series of consecutive chiefs, they would extend over 840 years at 15 years each, or 672 years at 12 years each.

At Njeñ, near Kucha, there are two circles close together, with the following details :—

No. of Circle.				Diameter.	Pillars in Circle.	Outer Pillars.	Totals.	Totals × 15.	Totals × 12.
				ft. ins.					
1	...	...	...	16 4	10	1	11	165	132
2	...	...	...	16 0	9	3	12	180	144

There are so few pillars at these that it is possible they were formed to commemorate the burials of two successive lines of head-men, whose rule, at the average rate, would reach 345 years, or, at 12 years each, 276 years, a period that does not appear to be excessive.

We may compare this with a single circle near Niāni-Marū (Fig. 11). Its diameter is 18 feet; there are 11 stones in the circle and 2 outer pillars. At the rate of 15 years per stone its construction occupied 195 years, or at 12 years per stone 156 years, if these are the memorials of a single line of consecutive chiefs, as seems most probable.

On a review of these particulars, it seems to me that we may arrive at the conclusion that while many circles were burial places reserved for consecutive village head-men belonging to single families, at others persons who were not head-men, or only subordinate head-men, appear to have been interred. There is no evidence available as to whether a chief's head wife or any of his other wives were buried near their husband. Among the present Jōlās, all the adult residents in a family "compound" or enclosure are buried together under the raised corn-store. They are all members of one family, and are ruled only by its head-man, who occupies a patriarchal position. When the space under one store is filled another is built. The single small circles found at several villages in what was the former Jōlā district show that among the ancient people a different custom prevailed probably for some centuries, so far as the chiefs were concerned.

The time occupied in erecting the circles of course cannot now be definitely settled. The tables that I have given show that at some places it may have lasted from about 150 to more than 300 years. That such an estimate is not excessive is proved by the experience at the Cross River district, already given. The chief difficulty in accepting this period, which ignores the uncertain evidence of the circles possessing a large number of pillars, lies in the small quantity of work that it would provide for the stonecutters. The average number of stones in a circle is 18·14.

If there be 100 circles in all,¹ there will thus be about 1800 pillars in them, to which may be added, say, 100 menhirs, making a total of 1900 stones. In two or three centuries this would give an average number of only $9\frac{1}{2}$ or 6 pillars respectively to be cut annually, a number which could never be sufficient to give regular employment to even a small party of stonecutters. Even if such pillars were prepared only occasionally, and not annually, the work could not possibly furnish an opportunity for others to acquire an adequate knowledge of it at these small quarries.

It may be inferred, therefore, that the men who cut the pillars may have been imported for the purpose when required, from some country where skilled labour of this description was obtainable. Apparently it was not a country occupied by a negro or Bantu race, since no worked stones are to be found in such lands, so far as I am aware, if we except the Rhodesian ruins. Evidently we must look elsewhere, that is, to some northern country. As Nubia, with the long overland journey across the deserts, must probably be left out of consideration, I think we must turn to Libya, or one of the territories near the Mediterranean Sea. Unfortunately no remains which will assist in determining this matter have been discovered, and for the present the question as to the land from which the stonecutters came must remain unsolved.

My personal feeling, in the absence of direct evidence, is that the men may have been brought by early traders from some Carthaginian settlement on the coast, in return for supplies of ivory and other products. It is known that trading stations were established by the Carthaginians along the coast of North-West Africa five centuries or more before our era. It is stated that they were destroyed by natives before the Romans explored the coast in the second century B.C. It is nowhere mentioned that any Carthaginian traders were settled along the lower part of the Gambia River, but it is well within the bounds of possibility that this was the case, since Hanno must certainly have sailed up the river for many miles on his voyage of exploration. On my last passage down it from Niāni Marn early in March, the number of stubble or bush fires on both sides of the river, just as he mentioned them, afforded a striking nocturnal spectacle where they were most numerous. To have observed them, as he remarked, "in all directions," Hanno's fleet must have been considerably higher up than the estuary, and must have spent one or more nights there.

The Carthaginian traders would find far better opportunities for a lucrative barter with the peaceable residents along the river than with the wild nomads of the Atlantic coast to the north of the Senegal River. If such marts were established at suitable sites up the river, whence roads or paths enabled communication to be

¹ There are several also in French territory, lying at villages along the continuations of the paths near which those I examined are found. My account includes five of them which are at the boundary between French and English territory.

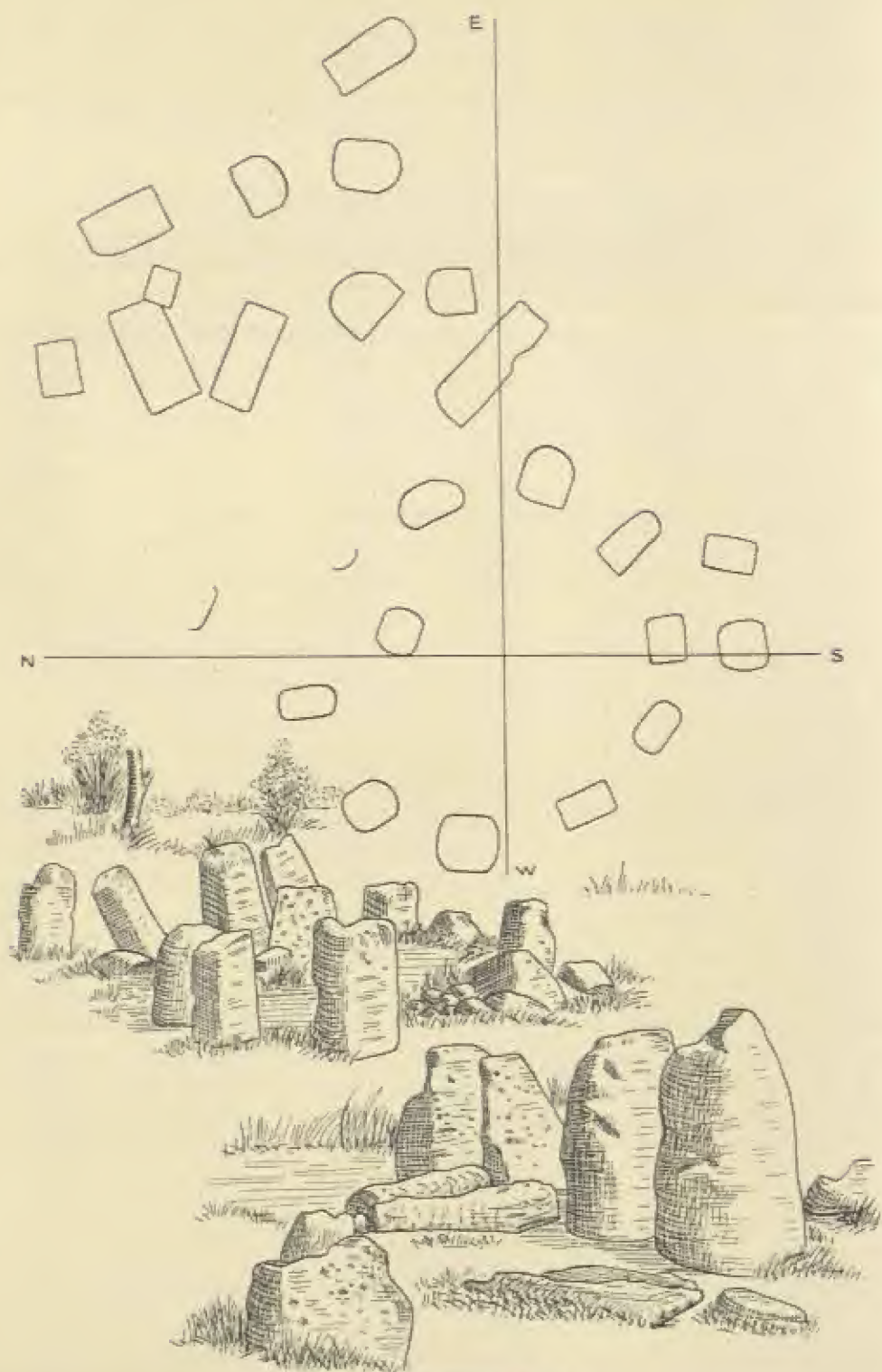


FIG. 12.—FANCHAN, NO. 5.

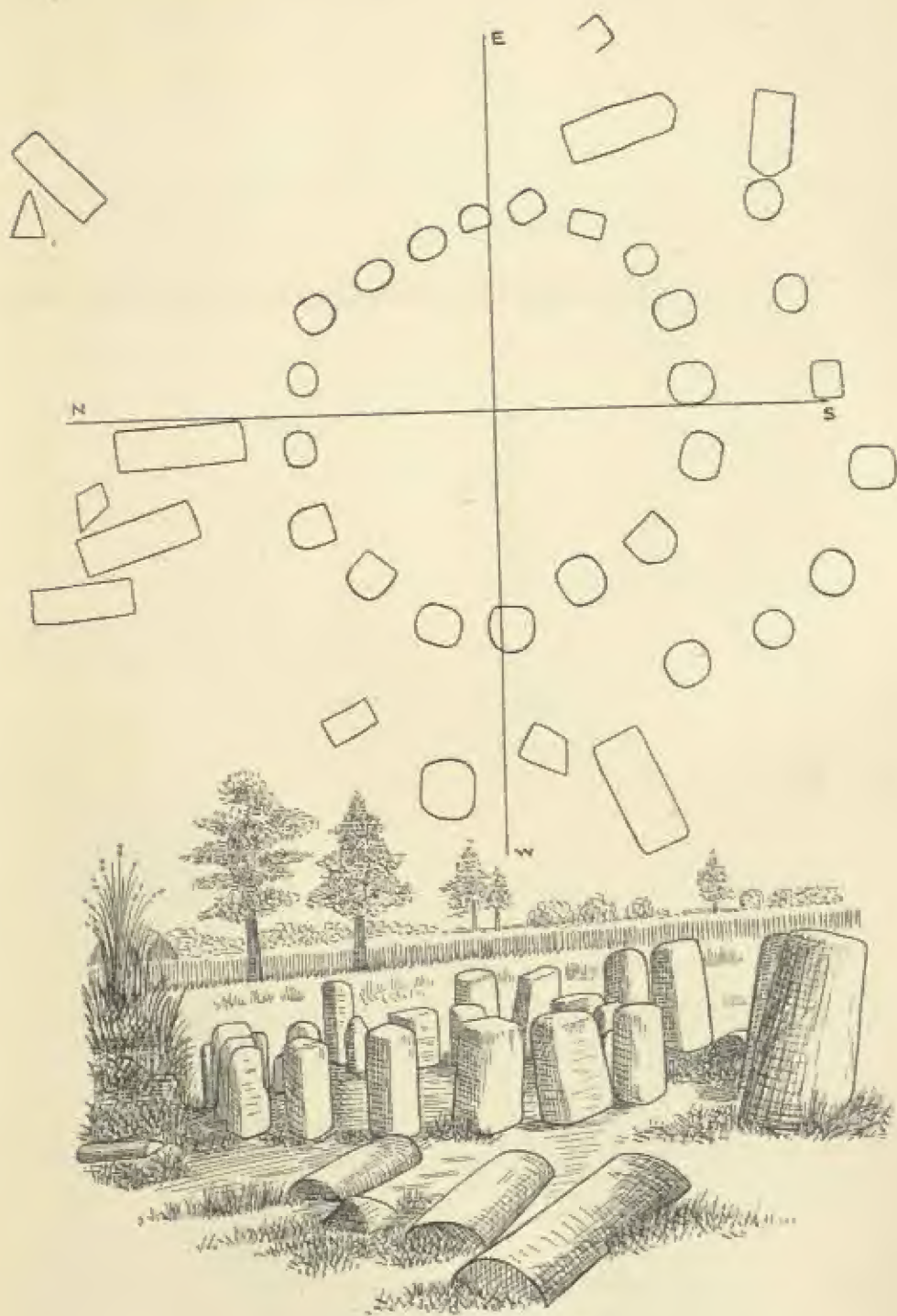


FIG. 13.—SIORO, NO. 2.

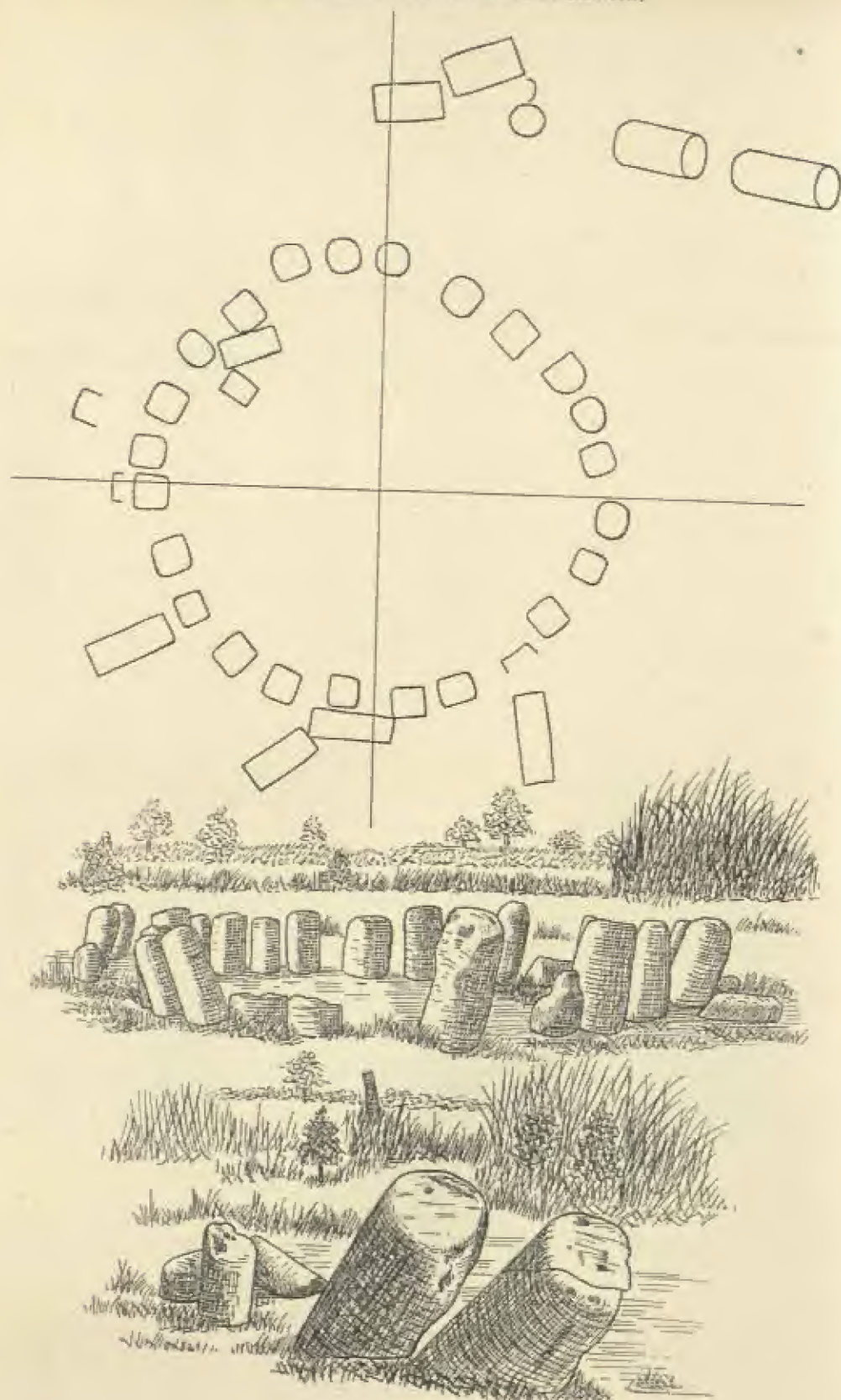


FIG. 14.—NIORO, NO. 4.

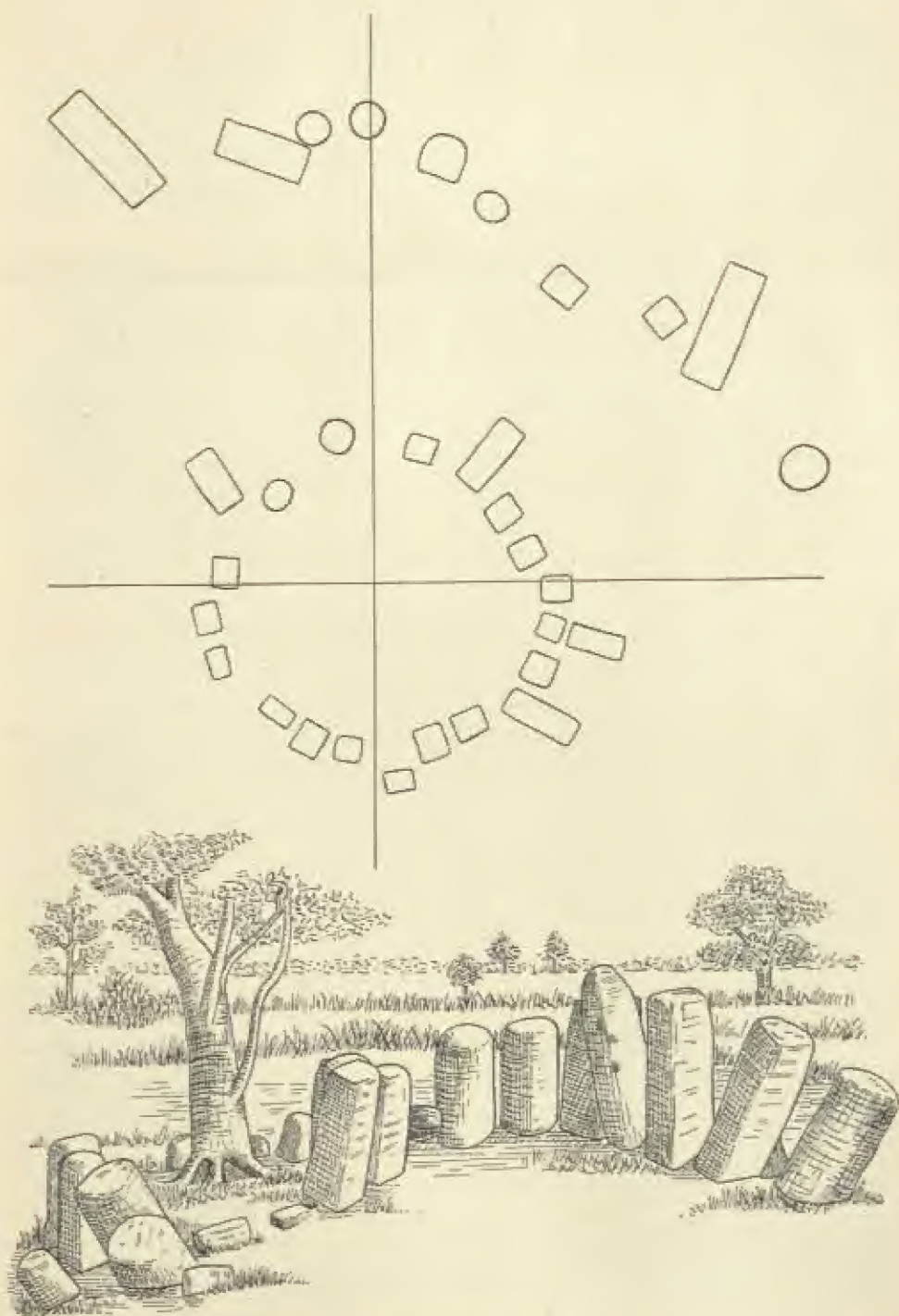


FIG. 15.—BARO, NO. 1.



FIG. 16.—ABOVE: GROUND NUT FARM. BELOW: SULE-KONEO, NEAR KAWURU.

extended through the interior, the traders might be able to arrange for occasional temporary importations of a few stonecutters, in order to keep on good terms with the chiefs, and in return for supplies of the goods they wished to collect, such as the tusks of elephants and hippopotami, skins and antelope horns, gums, wax, honey, and just possibly gold from the mines of Mandiŋg.

Though there are now no elephants in the country adjoining the lower part of the Gambia River, they were formerly numerous. Captain Stibbs, who had been sent to explore the river beyond what is now the boundary of our Protectorate, reported that while sailing back again, he saw three leagues above Jāwuru an immense herd of "two or three hundred" elephants, which came to the Gambia to drink; and five days later, a little to the west of the same station, he observed "a large drove" swim across the river. This was in March, 1724. Even in Mungo Park's time (1795) tusks were "frequently" picked up in the bush, and Moore made the same statement earlier in the century (1730). The natives informed him that the elephants were found "an hundred or two hundred in a drove" (*Travels*, p. 34).

An importation of Carthaginian artisans would account for the excellence of the workmanship, and also for the presence of the large number of conical pillars, and the carving of many with an elliptical or cartouche-shaped cross-section, as well as the cutting of the two receptacles for holding oil for lights. Seals of elliptical and cartouche forms (the oblong with rounded ends) were in common use in Phœnician countries. It may help, also, to elucidate some peculiarities in the clan designs engraved on the skin of the northern Jōlās of the present day, which do not seem to be of Negro or Bantu origin.

If this suggestion regarding the cutting of the pillars be adopted, we have in it a criterion as to the date of the work, that is, it must have been executed between 570 B.C. and 147 B.C., when Carthage was destroyed. Even if we place the date of Hanno's voyage at approximately 500 B.C., there would still be some 350 years during which the work might be done.

We may venture to take a glimpse into the state of this part of West Africa at yet an earlier period. If by the beginning of the fifth century B.C. we find practically the whole country brought under cultivation and occupied by a settled agricultural population such as the Jōlās, living in the same villages as at present, with the same roads or paths into the interior, and making trading voyages up and down the river, we may safely attribute the origin of this semi-civilization in the valley to a much more distant past. We know that when the first people came from the East they had already progressed beyond the stage of stone weapons and tools, since none have been found in the valley. At the period when the circles were formed they were already using articles of iron; this is proved by the barbed iron head of a fishing spear discovered in an excavation made at one of the circles by the late Mr. Ozanne,

when Commissioner of that Province, and deposited by him in the British Museum.¹

Thus the first influx of the Serères, followed by the Jólās, may have occurred before or during the second millennium B.C. This would allow time for the clearing and development of the agricultural lands, and for the emigration of some part of these peoples across the Gambia and towards the Casamance River. Such a movement is not likely to have taken place for a long time after the first settlement of the country. On the other hand, we know that these settlers were making the yellow Fōnyi pottery during the period when the stone circles were being erected, that is, long before the Wolof invasion and conquest of the Jōlā territory in the Gambia Valley.

Before the arrival of the Roman explorers the powerful and warlike Wolof nation appears to have overspread the littoral tract of Senegambia, and to have taken over the former Libyan name of the Senegal River, the Darā, which they still use. If the pillars were cut by Carthaginian workmen, the numbers in the circles show that the Wolof invasion of the Jōlā country cannot have preceded the fall of Carthage by very many years. When the Wolofs occupied that tract it is clear that the erection of the pillars ceased. Most probably they pillaged and destroyed all the trading stations, so that the Roman explorers were unable to discover any trace of them in the second century B.C.

§ 4.

At the present day there is not any doubt that all the circles are considered by the resident villagers to possess a religious significance. They are universally believed to be the favourite haunts of the Earth Spirit, or, as these Wolof and Mandinka Muhammedans term him, the Earth Demon, Banko Sentānē, in the Mandinka language.

Annual ceremonies are celebrated at them, or at one circle out of a group, before and after the cultivation of the adjoining millet or ground-nut fields, in order to ensure the benevolent neutrality, or perhaps the more active partizanship and assistance, of the Earth Spirit regarding the crops to be raised; and also, after the reaping has taken place to offer this protector, in return, the first fruits, and their humble thanks for his action in guarding them, or at least in preventing the bad effects of an unfavourable season. Without this propitiatory sacrifice it is believed that there would be little prospect of obtaining a satisfactory crop off the adjoining land.

It is evident that we have here to deal with a deity possessing some of the attributes of the Bahirawa Yakā of Ceylon, the Bhairava of India, who in one of his aspects is a dreaded demon, considered to be the guardian of the soil and of everything beneath its surface, as well as the protector of all sacred edifices, and

¹ I was informed by the chief of the district that two axeheads were also unearthed, but unfortunately these cannot be traced.

buried treasure. A special propitiatory ceremony is there thought to be necessary in order to appease him when the ground is about to be excavated for any purpose, such as the sinking of a well, or the unearthing of a hidden treasure that has been discovered, or the digging of the foundation of a building.

When I first arrived at the Gambia to survey the pillar-circles, the belief of the villagers in this spirit seriously interfered with the progress of my work for some weeks. Doubts as to the real reason of my visit, and the possibility that some damage might be caused to the circles, for which reprisals might be inflicted on them by this spirit, led the head-men and villagers to profess ignorance of their existence. All the ground being at that season thickly concealed under a cover of dense tall grass where the still higher millet did not hide everything, it was hopeless to attempt to search for the circles without local assistance; a guide was necessary to lead one to each locality. Thus, when the people declared that they had no knowledge of the existence of such works I was helpless. The chief of the district, who, perhaps inadvertently, and without consulting his usual advisers, had already informed me that there were many circles in the neighbourhood of Kawuru, where I made my first stay, assured me that he was instituting inquiries for them throughout the tract under his control; but I had reason to suspect that he was in reality recommending, if not actually ordering, the people not to show me them. At last he produced a guide who was able to point out two circles which were not very near a village. Probably by way of cooling my ardour I was also taken on a tramp of twelve miles on a very hot day in order to examine what proved to be only a concrete post erected at the point where the boundary of French Senegambia crossed one of the roads into the interior.

At length, through my daily persistence in a request to be shown two circles at a village called Gunkuru, which I had actually partly measured on a former visit to the country, the chief ordered the village head-man, a Wolof, to show me them. The very same head-man had led me close past them when I was taken to see the boundary stone; and on that occasion, in response to my particular inquiries for them, he replied that he himself knew nothing regarding any circles at his village, and had not seen any. When, at last, by his superior chief's orders, he took me to them, I found that I had been only 6 feet from the nearest one on my way to the boundary pillar; but it was so completely concealed by the thick grass that it was imperceptible as we passed by. Having now discovered that I was not damaging the circles in any way, this head-man, with his memory well refreshed by a suitable present, next showed me a group of circles a third of a mile further from his village, on the side of the same path, but also invisible from it. My difficulties now seemed to be overcome. After he had caused them to be partly cleared, I proceeded to the spot, nearly four miles from my camp, in order to measure them.

But by a strangely timed and most untoward accident my plans were almost wrecked for the time being. While I was engaged in recording the sizes of the

circles and pillars, a cry, "Safara! Safara!" (Fire! Fire!) arose at the village; a thick cloud of smoke showed plainly that it was ablaze, and in about half an hour a third of the houses had been burned down. It was caused by a sudden sharp gust of wind that blew some sparks from a house-fire into the thatched roof, which, fanned by the breeze, immediately burst into a flame.

Nothing could have been more unfortunate for my work at the time. Only about three circles out of what proved to be a group of six had been cleared of the thick grass and interlaced thorns which covered them, and those who had assisted quite readily before, now flatly refused to do any further work in clearing them. As for the head-man, he carefully avoided meeting me. Looking at the affair from the villagers' point of view, of course, one could not blame them. Everyone attributed the fire to the action of the Earth Spirit, who indicated by it his anger at their giving me an opportunity of pottering about and desecrating his favourite haunts and generally annoying him. They believed that some even more serious damage to them might be caused if they ventured to neglect this warning. It was only after some days that the owner of the ground on which were the circles could be induced partly to clear the rest of them in return for a present suited to the risk he incurred, so that with the assistance of my Mandinka "boy" I was able to complete the remainder of the work, and to obtain the necessary measurements. My own servants, being natives of Bathurst, more than a hundred miles distant, did not share the fears of the villagers, but the inhabitants of neighbouring villages unanimously declared that they had no knowledge of any other circles, and, as I had anticipated, any further progress in that part of the country appeared to be impracticable. After some days, however, my servants succeeded in finding one man to guide me to a circle about a mile and a-half away, which I had seen and examined on my former visit; and with that my work in this neighbourhood came to an end.

I felt most doubtful as to the effect of this occurrence in the next district higher up the valley; but, luckily, when I moved into it, the chief proved to be a most intelligent man, in fact, a splendid specimen of a Wolof gentleman, whom it was a pleasure to meet, and who was very willing to aid me. His view, I fancy, was that the fire at Gunkuru, a place not under his jurisdiction, and in which he felt no interest, was an isolated incident which did not affect his part of the country. It will be understood that I was glad to "let bygones be bygones," and not to add any importance to it by raising any avoidable discussion regarding it. The villagers elsewhere appeared to hold similar opinions of it. I have observed in Ceylon, also, that while the people of one province may have a great dread of incurring the anger of their local deities, whether good or bad, they usually express no such fears regarding those of an adjoining province.

At two places only I received reminders, according to native opinion, of the powers possessed by the Earth Spirit, but they were not sufficiently serious to affect the people of other villages. In the first instance, after waiting some weeks for any

bad effect of the Gunkuru fire to pass away completely, I had arranged with the owner of the ground on which stood three circles to make an excavation in one of them. As he admitted feeling some uncertainty regarding the opinion which the Earth Spirit might hold on the subject, it was settled that we should jointly carry out the usual formalities in the form of propitiatory offerings before commencing the digging; and everything seemed to be in a satisfactory position, when, a day or two before the date fixed upon for the ceremony, a severe abscess appeared on his thigh, and incapacitated him from taking any part in the business. His brother, who had agreed to help in the work, also fell sick, and was unable to leave his house; it then proved to be impossible to find even one other man in the village who would render any assistance. As we had never progressed beyond an intention to dig, no further harm came of it; but the coincidence was interesting, and might have had a serious effect on my future work.

To complete the story of my own experiences of the apparent interventions of this irritable and unreasonable spirit, I may mention that when I afterwards began an excavation at a circle in the next district, that is, as soon as I felt it would not be too risky to venture on another attempt, on the fourth day I gashed my left thumb badly, so that the hand became nearly useless for a week or more, and my boy, who was assisting me, was severely blistered near the end of his right forefinger, and was unable to make use of that hand for digging work. The palms of all the villagers who were chopping the hard ground also became much blistered, and they all refused to work longer. To them, I have no doubt that these experiences showed a direct interference of the Earth Spirit with the work of excavation.

It was remembered that some twenty years previously Mr. Ozanne, the Commissioner in charge of the province, made an excavation at one or more circles, and died shortly afterwards. According to native ideas, the two events were evidently connected. A story was also related to me of a Commissioner in another province who, doubtless for some satisfactory reason, caused trees to be felled in what was considered to be a sacred forest, with the result that all his servants perished within a year, presumably for aiding and abetting him. As the chief culprit naturally could not be expected to escape unpunished, the natives firmly believe that their master was also included in the death-roll; but this is quite incorrect, though the mere report has been sufficient for their credulity. Similarly, in Ceylon it is commonly stated in the Sinhalese villages that whoever breaks into and rifles a Buddhist temple or a dagaba (a relic shrine) is certain to die within a year, such being the penalty inflicted there by this truculent Earth Spirit; details of several examples were furnished to me. With such incidents as these to confirm him in his beliefs, it is not surprising to find that the simple native of either Africa or the East remains firmly convinced of the existence and power of this unseen deity.

The ceremonies performed at the circles on account of the cultivation are (1) for the protection of the crops, and (2) the offering of the first-fruits to the Earth Spirit.

The dates for them are determined by the cultivator of the land near the circle, Saturday being the preferable day of the week, a day specially connected with demons in the East also. The cultivators of adjacent lands unite with the celebrant in the provision of the necessary offerings and the performance of the ceremonies, in order that their fields may share in the benefits.

After the clearing of the grass, weeds, and brushwood from the land to be sown, and before any work of actual cultivation is begun at a farm, the cultivator, who, among the Wolofs, is usually the owner of the ground, makes a propitiatory offering to the Earth Spirit, the Banko Sentânê. If there be a pillar-circle at or very near the farm, it is always selected as the site for the ceremony, on account of its being the favourite resort of the Earth Spirit; otherwise a shady tree or ant-hill is utilized. For the offering or sacrifice the following things are necessary: a black animal, to wit, a cock as a minimum live-offering, or, better still, a black ram, or, best of all, a black bull calf; (2) liquors of various sorts, especially European or other fermented spirit (*dolo*), as well as palm wine from the wine palm, the "run" palm (*Borassus*), and the dwarf palm, or such of these as can be obtained; (3) new cooking utensils such as pots and calabashes. No women may be present or take part in the ceremony.

The offerings, after being brought to the site selected for the service, are first consecrated to the use of the Earth Spirit by the celebrant, but I have no account of this preliminary detail. All who take part in the ceremony first purify themselves by washing, and this is repeated on their return home, before entering their houses. The larger meat offerings are made when a sufficient number of men join together to be able to consume all the flesh at the spot after the offering is made, as none must be brought away, or left uneaten.

The most important part of the ceremony consists of the sacrifice of the live-offering, and the presentation of its blood. This animal is brought inside the circle, and the throat is cut there by the celebrant, with a knife. The flowing blood is caught in a large new calabash brought for the purpose, and is sprinkled over the whole ground of the circle, and over the stone pillars, as well as over each of the persons who are present, and the bottles or pots of liquor and the cooking utensils.

The animal is then plucked or flayed, cut up, and the flesh is cooked by boiling on the spot, inside the circle. After small parts of the flesh, including some of the liver, have been reserved and offered to the Spirit, all the rest of the meat is eaten up by the party, nothing but the bones being left. These are calcined in the fire, and buried with the meat-offerings in a recess or hole dug inside the circle to receive them. The liquid offerings are also poured into the hole, the bottles or pots containing them being usually broken against one of the pillars. The pieces are carried away, but fragments of them are often to be seen at the base of a pillar.

The owner of the site, who is the interested cultivator, is the celebrant on such an occasion. He makes an extempore prayer to the Spirit when the offering is

presented, requesting the Banko Sentânê to accept it, and to be favourable to the offerers. He petitions this deity not to be offended at the cutting and disturbance of the soil for the cultivation, to guard the sacrificers' crops grown on their farms, and to cause them to yield an abundant return. He is also in return promised an offering of the first-fruits when the crops are gathered. After this the party go home, feeling that they have taken the best step towards obtaining a good yield from the land. The cultivation may now be commenced at any suitable time.

The offering of the first-fruits is a very simple one. After the crops have been collected, the party of men reassemble at the circle, bringing with them a very small quantity of each of the products gathered. These have been already husked and cleaned at the village by the women. They consist of ground-nuts, maize, beans, and the various kinds of millet, which include *basô*, the large white millet (the Egyptian *durah*), *findo*, a red millet resembling it, but smaller, and the spiked millets with bulrush-like heads, *sunô*, *mājô*, and *sānyô*. These are formally offered to the Spirit, and are then collected into a ball, and buried in a hole dug in the circle. I did not obtain a record of the actual words used in making the offerings, my Mandinka "boy" being almost unacquainted with English, and unable to furnish me with an intelligible translation of the Wolof expressions employed. This is not a matter of great importance, since it was stated that each celebrant makes use of those words which occur to him as suitable. But the general meaning is everywhere the same.

For some unexplained reason, unless it be due to a feeling that there is an element of mystery involved in the ceremony, as the exclusion of the women indicates, I found it impossible for a long time to obtain the account of these details which I have given, everyone stating that he had no acquaintance with the ceremony. At length an intelligent Wolof guided me to a distant circle where only my Mandinka "boy" was present; and observing that he had been delivered into my hands providentially, as it were, I took advantage of the opportunity, and, at a mere venture, insisted that he should give me an account of the proceedings before I would allow him to return home, notwithstanding that he had already denied all knowledge of them. By this time I had learnt that the native of West Africa, like the native of the East, appreciates the advantage and comfort of dissembling when he thinks the occasion renders the concealment of the truth desirable. After considerable hesitation my guide reluctantly admitted that he himself was a celebrant at such a service, and then, no local witness being present, he proceeded to supply me with the information I have given. I had been told by my Mandinka servants that an offering is made before the work of cultivation is begun. It was afterwards an easy matter, armed with this knowledge, to obtain confirmation of the details at other villages, and to ascertain that the same ceremony is universally celebrated throughout the Gambia Valley and the neighbouring territories, even

as far as the Sierra Leone hinterland. Mandinkas, Fulas, Wolofs, Jólás and Serêres all perform it.

On my previous visit to the colony I was informed—wrongly, as the foregoing particulars show—in reply to special inquiries, that no religious ceremonies were practised at the Gambia circles; but my Mandinka interpreter on that occasion stated that he had observed some women going to offer certain prayers, which might possibly be for children, at the circles which he said he had seen in Timbi. I found nearly all the Gambia circles so thickly overgrown with the matted tall grass and thorny creepers as to make it evident that no use had been made of them for such purposes during many months, at least. As there were also no tracks leading to them, it seemed improbable that any ceremony other than those connected with the cultivation is ever performed at them in these days, at any rate, in the Gambia valley. This agrees with the information that was furnished by the villagers. It appears, therefore, that the ceremonies performed at the present day at the circles are not in any way connected with the purpose for which they were erected. There is no evidence that the ceremonial is a relic of a traditional offering originally presented annually to the spirits of the dead chiefs, and now diverted to the Earth Spirit; in fact, the pillars are not recognized as the memorials of any dead persons. Some people even term the circles "houses," and are of opinion that these pillars were the posts in the walls of the dwellings of the head men of the prehistoric inhabitants. With a bold disregard of chronology, they say that originally the pillars stood considerably higher than at present; but with a view to ejecting the occupants, Allah, at the supplication of a number of faithful Muharru priests, caused them to shrink to their present dimensions.

THE PLEISTOCENE DEPOSITS AND THEIR CONTAINED PALÆO-LITHIC FLINT IMPLEMENTS AT FOXHALL ROAD, IPSWICH.

PART I.—THE GEOLOGY OF THE DEPOSITS REVEALED IN THE EXCAVATIONS IN 1922.

By P. G. H. BOSWELL, A.R.C.S., D.Sc., *University of Liverpool*.

I.—*Location of the Site.*

THE site of the excavation is that of the old brickyard known variously as the Derby Road Brickyard (because of its proximity to Derby Road Station, Ipswich), the Valley Brickyard, or perhaps best as the Foxhall Road Brickyard, on account of its situation on that road. The site is located $1\frac{1}{2}$ miles E.N.E. of Ipswich Railway Station. Brickmaking has been abandoned for several years, and the field is now the property of Messrs. E. R. & F. Turner, whose works partly occupy the site. The sections are at the present time almost entirely obscured; but for many years, whilst they were open, they were well known to both Mr. J. Reid Moir and the writer.

The site lies at the bottom of an oval-shaped hollow, occupied at the surface largely by brickearth and partly by gravels of a glacioluvial character.¹ The outcrop of brickearth was proved by the writer, as a result of 6-inch mapping in 1910-11, to extend as far as the racecourse loam pits on the south, a total length of more than $\frac{1}{2}$ mile; the average breadth of the outcrop is about 200 yards. Flanking the brickearth at the northern end are glacioluvial gravels resting on the so-called "Middle Glacial" sands and gravels, which contain seams of brickearth. The outcrop of loam or brickearth and the basin-shaped hollow have thus a general N.N.W.-S.S.E. trend, and the outcrop as mapped follows closely that indicated on the Old Series 1-inch Geological Survey Map, sheet 48 N.E.

The site, which, as mentioned above, lies at approximately the lowest part of the hollow, has an altitude of almost 120 feet above O.D. The plateau around,

¹ The term "glacioluvial" was suggested by Professor J. W. Gregory to connote those irregular gravel deposits laid down from a sheet of water, proceeding from melting ice, rather than a river. *Trans. Glasgow Geol. Soc.*, vol. xiv (1911-12), p. 210, and *Geogr. Journ.*, vol. xl (1912), p. 169; also *Quart. Journ. Geol. Soc.*, vol. lxix (1914), p. 583.

composed of glacial sand and gravel, is at an average height of 130 to 140 feet.

The exact position in the brickfield at which the excavation was made was that suggested by Mr. Moir and agreed to by Mr. I. S. Double, Lecturer in Geology at the University of Liverpool, and myself. We were all familiar with the old brickfield workings and the site of the excavations carried out subsequently by Miss Layard and Mr. Reginald Smith. The exact choice of site was made more difficult by the knowledge that much of the brickfield had previously been turned over, but the wisdom of Mr. Moir's suggestion is evident from the account here presented of the results obtained.

II.—*Previous Literature.*

Mention should be made of the most important papers dealing with the geology of the site. In 1877, in a paper entitled "Observations on the Later Tertiary Geology of East Anglia," Messrs. Wood and Harmer¹ referred certain deposits of brickearth in Suffolk to the Contorted Drift ("Lower Glacial") and accounted for

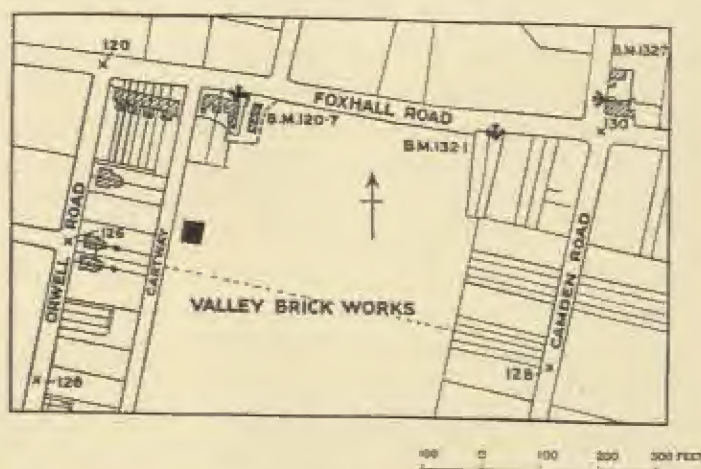


FIG. 1.—SKETCH-MAP SHOWING THE SITE (IN BLACK) OF THE EXCAVATION.

their outcrops by suggesting that they were impersistent beds with a dome-shaped surface protruding through the "Middle Glacial" sands. Amongst other sections in illustration of this structure they represented one (Fig. 21, Section xx, p. 104) passing from the Orwell Valley through Kesgrave. On this section the Foxhall Road site would be close to the point indicated as "Disused brick pit, $\frac{1}{4}$ mile east of Cauldwell Hall." In 1903 and the succeeding years Miss N. F. Layard described

¹ *Quart. Journ. Geol. Soc.*, vol. xxxiii (1877), p. 74.

in the *Journal of the Anthropological Institute* (vol. xxxiii, 1903, p. 41; vol. xxxiv, 1904, p. 306; and vol. xxxvi, 1908, p. 233), her excavations and discoveries of flint implements and bones at the site. Specimens of the various beds, including the boulder clay at the base of the series, are preserved, together with some of the implements, in the Natural History Museum, High Street, Ipswich. In a note on Miss Layard's 1904 paper Clement Reid stated (*loc. cit.*, p. 43), "I feel sure that the brickearth and implements are newer than the boulder clay, for the brickearth near its base is full of washed and reconstructed boulder clay material." The section recorded by Miss Layard was as follows:—

	ft.	ins.
Dark surface soil	1	6
Red gravel	4	6
White earth clay	5	6
White sandy clay	1	0
Palaeolithic floor—red gravel stain.		
White earth clay	2	6
Sand and gravel (containing bones of mammoth, deer and ox, and a tooth of rhinoceros) ..	1	0
White earthy clay	5	0
Yellow clay	3	0
Loamy gravel	1	0
Strong brown clay	2	0
Chalky boulder clay	4	0
	31	0

The implements found by Miss Layard were of late Acheulian character, and are dealt with by Mr. Moir on p. 252 ff.

Whilst Miss Layard's investigations were proceeding, I had numerous opportunities of visiting the brickfield, and at the time suggested (independently of my old friend Clement Reid) that the brickearth, instead of being a mound of the Contorted Drift ("Lower Glacial") protruding through the "Middle Glacial" sands and gravels, lay as a lenticular mass in a hollow in the latter, protecting at the bottom a deposit of Chalky Boulder Clay ("Upper Glacial"). An excavation made about 1908 or 1909 in a part of the brickfield later occupied by a pond, proved the occurrence below the brickearth of what I then considered to be Chalky-Kimmeridgian Boulder Clay. Unfortunately, I did not preserve the specimen I brought away.

My views on the sequence of deposits in the brickfield were published in 1914 in a paper¹ dealing with all the occurrences of similar brickearths in Suffolk, which, it was contended, lay in isolated lake-like hollows on the plateau. The sections there given (Fig. 10, p. 135) across the area under discussion is reproduced here



FIG. 1A.—SECTION ACROSS FOXHALL ROAD BRICKFIELD, IPSWICH.—*P. G. H. Boswell.*

1. Probable position of Eocene deposits. 2. Probable position of Red Crag.
3. Glacial Sand and Gravel. Black: Chalky-Kimmeridgian Boulder Clay.
4. Brickearth, becoming gravelly and disturbed in upper part.

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(Fig. 1A), for the recent excavation has, I believe, borne out my interpretation. My friend the late F. W. Harmer agreed with most of my conclusions, and abandoned his earlier view as to the age of the brickearth. A sketch, or rather drawing to scale, which I made of the top glacielluvial-like gravel at the eastern side of the

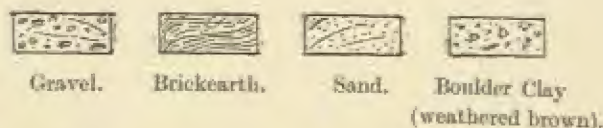


FIG. 1B.—SECTION OF UPPER GLACIAL DEPOSITS, FOXHALL ROAD BRICKFIELD, IPSWICH.—*P. G. H. Boswell.*

(About 9 feet high and 50 feet long, only about 40 feet being shown.)

(Reproduced by permission of the Council of the Geologists' Association.)

brickfield (aspect of section S.W.), since excavated and obscured, was reproduced as Fig. 11, p. 136, of the paper cited. The disturbed nature of the beds, the wisps of boulder clay and loam, etc., have a considerable significance in view of Mr. Moir's discoveries of implements in

¹ "On the Occurrence of the North Sea Drift (Lower Glacial) and certain other Brickearths in Suffolk," *Proc. Geol. Assoc.*, vol. xxv, p. 121.

the gravel (see p. 242). The paper just cited was followed, two years later, by one on the petrological characters (notably the mechanical and mineral composition) of the North Sea Drift and other (Upper Glacial) brickearths.¹ An endeavour was made in this paper to show that the mechanical composition of the two series of deposits was very different. The composition of a sample of reddish brickearth from the Foxhall Road brickfield was stated in Table E on p. 88.

Finally, following on further excavations carried out by him in an attempt to clear up the archaeological difficulties of the sequence, Mr. Reginald Smith published a paper in the *Proceedings of the Geologists' Association*, entitled "Implements from Plateau Brickearth at Ipswich" (vol. xxxii, 1921, p. 1). Careful records were made of the strata revealed by the excavation, and the implements found were described. The section did not differ essentially from that recorded by Miss Layard, but thinning-out, transgression and a general northerly dip of the deposits were observed. Mr. Smith desired, though for what reason is not clear to me, to make the site that of an ancient river-channel, and was also inclined to revert to the old view that Lower Glacial deposits were present. No evidence was given in support of a fluvatile origin or Lower Glacial age for the deposits, and no attempt was made to review and criticize the evidence on which previously expressed conclusions were based. The concluding sentences of the paper may, in the light of the recent excavations, be quoted with interest:—

"The latest sloping deposit against which abuts the dark grey brickearth is evidently of St. Acheul date; and it is logical to associate the contorted gravel above with a severe glaciation, which everyone recognizes in the period of Le Moustier. But Mr. Reid Moir's recent finds in the Chalky Boulder Clay, north of Ipswich, have convinced Professor Marr that the deposit in question dates from Le Moustier times. Hence the material at the bottom of the boring cannot have been Chalky Boulder Clay but (presumably) North Sea Drift—a return to the position of 1877. What say the geologists?"

Hitherto the geologists have not replied, but the result of the recent excavation has been to demonstrate the correctness of their contentions, and to prove that the material at the bottom of the boring is typical Chalky Boulder Clay. In any case the finding of North Sea Drift there would not have been a return to the position of 1877, for, in their published account, Wood and Harmer dealt only with the brickearths in which Acheulian implements were later discovered, and not with any Boulder Clay underlying them.

¹ *Proc. Geol. Assoc.*, vol. xxvii (1916), p. 79.

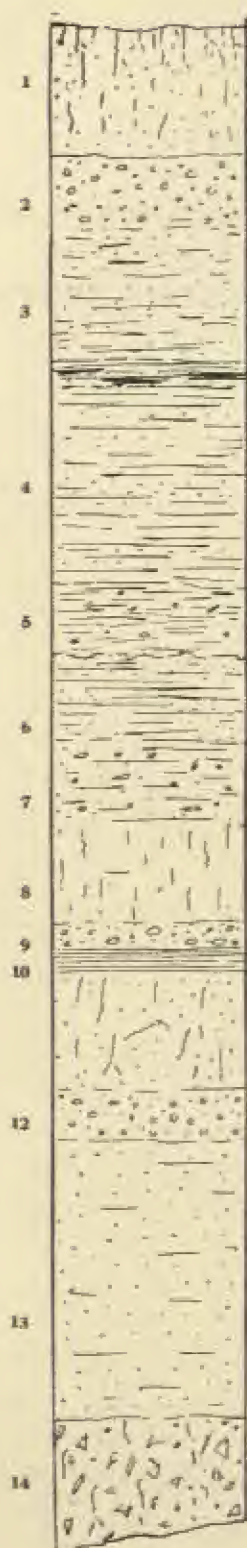


FIG. 2.

III.—*The Geological Succession proved in the recent Excavations.*

The following table is compiled from notes made by Mr. Moir and myself. Mr. I. S. Double also visited the excavations from time to time, and concurs in the description of the deposits here given (Fig. 2). The thicknesses were estimated by myself and later measured up by Mr. Moir. Here I should like to pay a tribute to the extreme care with which Mr. Moir measured, described and sampled the deposits, and to the accuracy of his records.

Scale, 4 feet to 1 inch.		
Bed No.		ft. ins.
1.	Sandy surface soil	about 2 7
2.	Fine reddish gravel with pockets of sand passing into and (?) incorporated with	1 3
3.	Stony reddish, mottled sandy clay, with grey patches = "Pug"	3 0
4.	Laminated dove-coloured brickearth, weathering yellow-brown; somewhat sandy in parts (with darker bands, 4A, near the surface), passing into	3 3
5.	Bluish brickearth with scattered stones, resting on irregular surface of	3 0
6.	Sandy brickearth	1 9
7.	Gravelly and sandy loam	1 9
8.	Sandy loam with few signs of bedding	2 0
9.	Gravelly, sandy and clayey band	0 6
10.	Mottled clayey loam with much water	0 6
11.	Sandy clay with chalk fragments; very like a sandy boulder clay	2 6
12.	Shingly gravel	1 0
10.	Limit of excavation.	
13.	Reddish loamy sand	bored for 5 9
14.	Dark grey boulder clay with many chalk pebbles and some derived Jurassic shells	bored .. 2 6
12.		31 4

The excavations were carried down to the top of Bed No. 13, when serious water trouble stopped further operations; it was at this stage that my last visit to the site was made. Mr. Moir then put down a 4-inch borehole and proved the thickness of Bed No. 13 and the presence of 2 feet 6 inches of Bed No. 14, preserving a large sample of the latter for examination and future reference. It would have been desirable to continue the borehole until the Bed No. 14 had been pierced, in order to discover what deposit underlay it, but the thickness of drift in similar hollows in East Anglia

had sometimes proved so great, and the excavation had already cost so much, that it was reluctantly decided to discontinue the boring.

IV.—*The Petrological Character of the Strata.*

(a) *General Lithology.*

Bed No. 1.—Sandy surface soil and subsoil, consisting of grey-brown slightly loamy sand with small pebbles of flint and quartzite and ferruginous pellets.

Bed No. 2.—Reddish-brown gravel with a sandy matrix; pebbles small and consisting of broken or rounded flint, vein quartz and pale quartzite.

Bed No. 3.—Mottled reddish-brown and grey loam, with occasional pebbles of flint having a white or bluish surface; vein quartz also occurs.

Bed No. 4.—Tough grey clayey brickearth, with rare tiny white flint pebbles, 3 or 4 mm. in diameter.

Bed No. 4A.—Similar to No. 4, but with darker streaks which become white on ignition and are, therefore, probably due to organic matter.

Bed No. 5.—Brownish-grey brickearth with rare flint pebbles having a brown patina.

Bed No. 6.—Very sandy brickearth containing rare flints with bluish or whitish surfaces.

Bed No. 7.—Pale-coloured mealy and loamy sand with gravel composed of flint-pebbles or brown, white and black fragments, frequently showing fractured surfaces.

Bed No. 8.—Sandy grey loam with brown patches; flint pebbles not uncommon, with surfaces white and black.

Bed No. 9.—Sandy and gravelly clay containing many flint pebbles, white and brown; also vein quartz and clear quartz.

Bed No. 10.—Clayey brickearth, mottled in brown and deep grey tints containing tiny flint fragments.

Bed No. 11.—Brown sandy clay containing small fragments of chalk.

Bed No. 12.—Shingly flint gravel with dark brown sandy matrix.

Bed No. 13.—Reddish-brown loamy sand, containing many rounded and polished quartz grains, flint chips, portions of silicified shells and other fragments of derived fossils.

Bed No. 14.—Dark grey tough boulder clay with abundant chalk pebbles and occasional fragments of derived Jurassic shells.

(b) *Mechanical Composition.*

In view of the irregular character of some of the deposits it was felt that mechanical analyses would hardly give a true idea of the composition. Such

analyses, however, obtained by sieving the coarser grades and elutriating the finer of the more regular beds, are as follow :—

Percentage Weights.

Bed No.	V.C.S. Greater than 1 and less than 2.	C.S. Greater than 0·5 and less than 1.	M.S. Greater than 0·25 and less than 0·5.	F.S. Greater than 0·1 and less than 0·25.	c.s. Greater than 0·05 and less than 0·1.	f.s. Greater than 0·01 and less than 0·05.	c. Less than 0·01.
1	1·6	3·1	21·4	48·4	9·9	8·5	7·1
3	1·5	4·7	12·2	10·9	7·5	32·4	30·8
4	0·8	1·6	4·6	3·5	7·9	32·4	49·2
5	4·3	7·8	18·1	13·8	11·8	27·5	16·7
6	1·7	6·7	25·9	16·0	14·5	25·3	9·9
7	4·5	13·3	35·4	20·8	9·8	11·9	4·3
8	3·9	7·9	19·4	12·5	8·7	25·1	22·5
10	0·6	0·8	1·3	2·7	0·7	17·3	76·6
11	0·5	2·2	9·3	8·7	11·5	37·9	29·9
13	1·0	3·6	14·6	19·4	37·2	17·5	6·7
14	1·6	2·2	5·2	7·3	7·6	21·8	54·3

Diameters in mm. All samples sieved to 2 mm., which is the upper limit of sand grades. V.C.S. = very coarse sand; C.S. = coarse sand; M.S. = medium sand; F.S. = fine sand; c.s. = very fine sand or coarse silt; f.s. = fine silt; c. = clay.

To give some idea of the composition of the gravelly portion of some of the deposits, the following determinations were made by sieving (lower size-limit for gravel grades, 2 mm. diameter) :—

Percentage Weights.

Bed No.	Greater than 7 mm. ¹	Greater than 4 mm. ² and less than 7.	Greater than 2 mm. ³ and less than 4.	Greater than 1 mm. and less than 2.
2	78·2	7·8	6·0	8·0
7	65·6	10·8	10·8	12·8
9	86·5	3·7	4·4	5·4
12	68·1	13·0	9·6	9·3

¹ Approximately $\frac{1}{4}$ inch.

² Approximately $\frac{1}{8}$ inch.

³ Approximately $\frac{1}{16}$ inch.

(c) *Mineral Composition.*

The samples were treated in the usual manner, being washed free from clay and fine silt and screened free from gravel. They were then separated into crops of various densities, and into further groups by means of the electro-magnet.

The following list of minerals identified is not to be regarded as exhaustive. Practically all the minerals mentioned are abundant and typical of the deposits.

Whilst the proportion of particular minerals varied somewhat in the different beds examined (Nos. 3, 4, 6, 8, 13 and 14), the general assemblage was the same throughout.

<i>Cubic.</i>	<i>Tetragonal.</i>	<i>Hexagonal.</i>	<i>Monoclinic.</i>
Garnet.	Rutile.	Apatite.	Actinolite.
Magnetite.	Zircon.	Calcite.	Augite.
Pyrite.		Ilmenite.	Biotite.
		Quartz.	Chlorite.
		Tourmaline.	Epidote.
			Glaucophane.
			Hornblende.
			Muscovite.
			Orthoclase.
			Sphene.
<i>Orthorhombic.</i>	<i>Triclinic.</i>	<i>Cementing materials, aggregates, etc.</i>	
(1) Chialstolite.	Anorthoclase.	Limonite.	
Marcasite.	Kyanite.	Micaceous aggregates.	
(2) Sillimanite	Plagioclase.		
Staurolite.			
Topaz.			

Garnet is an exceedingly abundant mineral, and occurs in grains of all sizes up to 0.5 mm. diameter. It varies in colour from colourless to brown-pink and purplish-pink. Crystal form is not commonly seen; many grains are rounded, others are irregular and embayed.

Magnetite is, excepting the limonitic cement, the most abundant iron oxide, the grains displaying the usual characters. Some cubical crystals of the mineral have been observed.

Pyrite occurs abundantly in well-shaped small brassy crystals, frequently octahedral.

Rutile is a common constituent, the grains being of all sizes and shapes. The colour varies from yellow to a deep red-brown.

Zircon is, as usual, an abundant mineral.

Apatite is not uncommon, but is apparently disappearing by solution, most of the grains having a somewhat rounded form or being rounded prisms.

Calcite in well-shaped rhombs is frequently seen. Shell fragments also occur.

Ilmenite (*Titanoferrite*) is always present, but is subordinate in amount to magnetite.

Quartz is one of the most abundant constituents, making up a large portion of the "light" crop. Both opaque vein quartz and clear grains occur.

Tourmaline is always present as brownish-grey comparatively small grains or prisms (0.1 mm.). Blue and pinkish grains also occur. It is, however, less abundant than garnet, hornblende, epidote and other minerals.

Marcasite in irregular dull brassy aggregates has been noted.

Staurolite is moderately abundant, the smaller grains (0.1 mm.) showing irregular fracture and a delicate pale golden colour; the larger grains (0.2 to 0.3 mm. diameter) are usually rounded and display deep golden-brown tints and marked pleochroism.

Topaz is occasionally present as colourless, approximately basal, flakes (0.3 mm. in diameter).

Actinolite in colourless to pale green aggregates of fibres, with an extinction up to 15° , is frequently seen.

Augite is present in somewhat irregular almost colourless grains.

Biotite, displaying the usual characters of basal flakes, occurs occasionally.

Chlorite, in blue-green almost isotropic flakes, of positive sign, is generally present.

Epidote is an abundant constituent. It has two chief habits—as highly-rounded large grains (0.2 mm.) of rich yellow-green colour, displaying marked pleochroism and as smaller angular grains or cleavage flakes of a more delicate tint or even colourless.

Glaucophane is not common. The flakes so identified possess a good cleavage, a purple to blue pleochroism, and are biaxial.

Hornblende is exceedingly abundant as cleavage flakes of all sizes (up to 0.4 mm. diameter), and displays various tints of green and bluish-green. The deep blue-green to blue tints of certain grains suggest that a sodic variety resembling riebeckite is present.

Muscovite is very plentiful. The basal flakes are frequently large and rounded (0.4 mm. in diameter).

Orthoclase Felspar is not so abundant as plagioclase. The grains are clear and little altered.

Sphene, in the form of yellow-brown grains, is a rare constituent.

Plagioclase Felspar, in clear or kaolinized grains, is practically as abundant as quartz. Many of the grains have a refractive index about equal to that of quartz, but are biaxial. They show no twinning, and glassy grains predominate. The "chequered" appearance characteristic of anorthoclase has also been observed in some grains.

Kyanite is variable in its occurrence. At times it is abundant. The form is that of well-marked rectangular cleavage flakes, 0.2 mm. long.

Limonitic and micaceous aggregates, and grains full of inclusions, which may be referred to chialolite, also occur.

The richness of the assemblage described above and the character of many of the minerals leave no doubt in the mind of a worker on the petrology of sediments

that the deposits are of glacial origin. In no other British deposits is this rich type of residue, drawn from many varied sources, found. At present we are unable to distinguish lower glacial from upper glacial deposits by means of the heavy minerals.¹ The records are here given, however, for future reference.

V.—*Suggestions regarding the Geological History of the Deposits.*

That the whole series of beds described above represent a filled-in hollow, the approximate limits of which are indicated by the outcrop of brickearth, is strongly supported by the record of a boring for water made recently by Messrs. E. R. and F. Turner at their works adjoining the site of the excavations. By the courtesy of Messrs. Turner, I am able to quote here the record (which has hitherto not been published). Notes by myself are placed in square brackets. The interpretation of the beds reached in the borehole is based on the descriptions given in the record and on a knowledge of the character, thickness and height above Ordnance datum of the various deposits in the neighbourhood.

Beds passed through in boring Well at the Works of Messrs. E. R. and F. Turner, Foxhall Road, Ipswich [about 120 feet O.D.].

				Thickness.	Depth.
				ft. ins.	ft. ins.
[Drift 50 feet 9 inches and base of Red Crag (?)]	Made-up ground	..	..	12 0	12 0
	Sand .. ..	..	..	36 0	48 0
	Ballast .. ..	..	..	1 6	49 6
	Hard grey flint .. ..	..	..	1 3	50 9
[London Clay and basement bed, 45 feet 3 inches]	Claystone .. ..	..	..	2 0	52 9
	Blue clay .. ..	..	..	42 0	94 9
	Quartz and rock .. ..	..	..	1 3	96 0
[Reading Beds, 21 feet]	Mottled clay .. ..	..	..	21 0	117 0
[Thanet Beds, 12 feet]	Loamy green sand .. ..	..	..	12 0	129 0
	Chalk .. ..	..	..	121 0	250 0

The well is lined with 132 feet 6 inches of 6-inch tubes.

The water-level is 109 feet

(Signed) CYRIL G. CATCHPOLE,
Architect and Surveyor.

¹ On this point and on assemblages of minerals from glacial deposits, see *Proc. Geol. Assoc.*, vol. xxvii (1916), p. 89.

Although the well is only 192 yards due south of the site of the excavations here described, it will be noted that no strata corresponding to brickearths or boulder clay were pierced. The suggested grouping of the Beds places the surface of the Chalk at 9 feet below Ordnance datum, that of the Thanet Beds at 3 feet above Ordnance datum, and that of the London Clay at 70 feet above Ordnance datum. All these results accord well with my previous determinations,¹ and the thicknesses of the Thanet Beds and Reading Beds are precisely what one would predict. The thickness of the London Clay is a little less than might have been predicted. Other features of the record also help to make it clear that the Eocene deposits are in their proper position and undisturbed. Whether the Red Crag is present or not is uncertain; if present, its thickness is equally in doubt. The upper part of the boring seems to have been made in the glacial sand and gravel which forms the surrounding plateau. The boundary of the old lake-like hollow, therefore, seems to have passed north-eastwards of the borehole.

It will be noted from the records of the excavations by Mr. Moir (p. 234) and Miss Layard (p. 231) how close is the agreement as to the depth at which the dark chalky boulder clay was reached, namely 28 feet 10 inches and 27 feet respectively below the surface.

The climatic conditions indicated by the beds may now be considered, beginning with the earliest. Bed No. 14 is indubitably a glacial boulder clay containing abundant chalk. As Mr. Moir noted at the time of the boring, it also contained derived Jurassic *débris* such as fragments of oyster shells. In washing down the boulder clay I found numerous fragments of this character. The dark grey colour, the toughness, mechanical composition (p. 236) and derived Jurassic shells all confirmed the opinion formed from samples obtained prior to 1910, that the deposit was Chalky-Kimmeridgic Boulder Clay (Upper Glacial). Miss Layard's records and Clement Reid's notes also bear out this identification. Miss Layard observed the presence of a lump of Red Chalk in the boulder clay, and remarked that in the same clay from another part of the pit, *Gryphaea incurva*, belemnites, oolite and volcanic tuff occurred. Although Clement Reid, in describing the Cromer Till (Lower Glacial) of the Norfolk cliffs, recorded Jurassic (Kimmeridgic and Liassic) *débris*,² such material is rare in inland sections of Lower Glacial deposits. On the other hand, Red Chalk, oolite and derived Jurassic shells are characteristic of the Chalky Boulder Clay (Upper Glacial) of East Anglia. Moreover, if the boulder clay at the bottom of the Foxhall Road hollow were Lower Glacial, we should naturally expect it to be, as I have previously indicated,³ of the Norwich brickearth type and not that of the Cromer Till or Contorted Drift. The latter type is confined to the Cromer ridge, and has never been observed south of it. The homotaxially-equivalent bed,

¹ *Quart. Journ. Geol. Soc.*, vol. lxxi (1916), p. 546, and Plate II.

² "The Geology of the Country around Cromer," *Mem. Geol. Survey*, 1882, p. 87.

³ *Proc. Geol. Assoc.*, vol. xxv (1914), p. 149.

of central and southern Norfolk and northern Suffolk (and here it may be noted that the deposit has never been proved to occur far south of the border between the two counties) is the Norwich Brickearth. This deposit is of a different type from that at Cromer. It is decalcified (chalk pebbles only rarely occurring), very sandy, brownish-grey or brownish-red to yellow, with sparsely-scattered boulders. The latter frequently include erratics of igneous and metamorphic rocks. Derived fragments of Pleistocene shells often occur, but neither these nor foraminifera were found in washing Bed No. 14.

The deposit at Foxhall Road shows none of the features just mentioned, which are characteristic of the North Sea Drift; on the contrary, it displays all those of the Chalky-Kimmeridgic Boulder Clay.

Bed No. 13, which follows, is a typical glacial sand, its coarser *débris* being similar to that in the boulder clay below.

Bed No. 12 is a gravel consisting almost entirely of flint. These deposits (Nos. 12 and 13) appear to have been laid down from the flood waters of retreating or advancing ice.

Bed No. 11 possesses some of the aspects of a sandy boulder clay. I cannot regard it as anything but a glacial deposit, although it may have been laid down in water. Bedding could not be observed in the section, and, so far as its coarser constituents are concerned, it is badly graded.

Bed No. 10 yielded evidence of quieter conditions, possibly following on ice-retreat when brickearths similar to the washed-out material of the boulder clay were laid down in pools in almost still water; for, from the mechanical analysis (p. 236) it is evident that a current of only 1/10 mm. per second (or about 14 inches per hour) would carry away more than three-quarters of it in suspension.

Bed No. 9 shows a recurrence of more active conditions, water travelling with at least a velocity of 2 miles per hour being required to transport the bulk of the material.

Beds Nos. 8 and 7 indicate oscillation in the activity of flow and transport, No. 7 resembling No. 9.

Beds Nos. 6 and 5 yield evidence of the waning of activity and the deposition of successive sandy and silty material which becomes more clayey above.

Bed No. 4 again indicates almost still-water conditions, a velocity of less than 2 mm. per second (or about 25 inches per hour) being sufficient, once the material was in suspension, to carry away over 80 per cent. of it. The mixture of apparent organic matter in this deposit suggests the presence and decay of vegetation near at hand.

Bed No. 3 indicates the passage of a faster current bringing in a small quantity of sand, and probably heralding the torrential conditions under which portions of Bed No. 2 were deposited.

Bed No. 2. From the mechanical analysis it will be observed that almost 80 per cent. of this bed consisted of coarse gravel. Combining the observations made upon it prior to and during the recent excavations, we note the following important points with regard to this deposit:—

1. It is an unstratified gravel of glaciéluvial character.
2. Its constituent boulders and pebbles are battered and striated. The striations are precisely similar to those found on erratics.
3. It contains wisps of boulder clay.
4. It is mixed with sand and brickearth, the whole having in places suffered notable contortion.

The above characteristics suggest very strongly a recrudescence of cold, if not glacial, conditions. The contorted nature of the beds might be due to one or more of the following causes: (*a*) slipping on the side of a hill, or on the slopes of a valley, whilst the mass was still sodden with water; (*b*) decalcification and collapse in consequence of the removal of chalk or limestone pebbles or calcareous matrix; (*c*) collapse resulting from the thawing-out of ice when the whole mass was in a condition resembling "dirt-bands" in the bottom of an ice-sheet; or (*d*) contortion of a sequence of gravel, sand, and brickearth by a tongue of advancing ice.

These possible explanations may be considered *seriatim*. (*a*) The present elevation of the plateau is only about 10 to 20 feet above that of the gravel, and the gradient of the sides of the hollow is too low for slipping. There is no evidence that any adjoining parts of the plateau stood at a much higher level and have been denuded away. It seems to me, therefore, that this explanation must be rejected. (*b*) To yield the considerable amount of contortion by reduction of the volume of the deposits consequent on solution of chalk or limestone, the quantity of the latter must have been very great—possibly as much as half the bulk. Limestone never makes up a large part of East Anglian glacial deposits. The quantity of chalk required for this explanation is far greater than the proportion in the Chalky Boulder Clay. Moreover, our experience of glaciéluvial gravels leads us to expect to find little or no chalk therein, for only the hardest constituents, such as flint, survive transport. (*c*) The supposition that the gravel, sand and brickearth were frozen into the base of an ice-sheet, and were there contorted by forward movement of the ice seems reasonable. On the thawing-out of the ice the curves would be retained, and perhaps accentuated, in the *débris*. The disturbance is on rather a small scale at Foxhall Road, but there does not appear to be any actual evidence against such an explanation. (*d*) That the deposits, hitherto in regular succession, were buckled by the advance over them by a tongue of ice, is more difficult to understand in the light of modern observations of glacial phenomena. On the

other hand, the explanation under (c) above illustrates a well-known feature of ice action. Whilst not ruling out (d), I am inclined to regard (c) as the probable explanation. In either case a recurrence of glacial conditions would necessarily be assumed.

The occurrence of highly contorted brickearths and gravels overlying Chalky-Kimmeridgic Boulder Clay is by no means uncommon in Suffolk. Many examples have been described,¹ the disturbance being at times observed in sections as much as 80 feet long and 20 feet deep. In some cases very chalky boulder clay is involved in the disturbance or overlies the contorted brickearths, which in turn overlie Chalky-Kimmeridgic Boulder Clay. (The brickearths which underlie the latter are not being considered here.) Not uncommonly also the intensely Chalky Boulder Clay overlies the Chalky-Kimmeridgic type, but I cannot call to mind a section where the sequence was reversed.

VI.—Possible Correlations.

Both the intensely Chalky Boulder Clay and the Chalky-Kimmeridgic type have been included in the well-known deposit termed "The Great Chalky Boulder Clay." The time has now arrived, however, when we may be constrained to look for evidence in favour of the view that instead of both types being due to one ice-sheet they may result from climatic oscillation with a time interval between two glacial episodes. If such were the case (and this is frankly speculative, although certain sections appear to yield evidence in support), the disturbed gravels forming Bed No. 2 at Foxhall Road might well be correlated with the intensely Chalky Boulder Clay elsewhere. The presence of two rather different types of Chalky Boulder Clay overlying one another has frequently been noted in various localities in the East of England. Attempts have been made—as, for example, by the late Dr. A. Irving at Bishop's Stortford—to correlate the lower type with the North Sea Drift of Cromer, a view to which, after seeing the deposits, I have been strongly opposed. The two types always appeared to me to be varieties of the Great Chalky Boulder Clay. The relation of the Arctic bed at Hoxne, the Lea Valley, Barnwell and elsewhere to each of these two varieties in East Anglia remains still to be established.

Such a sequence would give us three definite boulder clays, namely, the Norwich Brickearth (North Sea Drift), the Chalky-Kimmeridgic, and the intensely Chalky Boulder Clay.² It is of interest to note that in Yorkshire and Lincolnshire three

¹ P. G. H. Boswell, *Proc. Geol. Assoc.*, vol. xxv (1914), p. 142.

² The Chalky-Kimmeridgic Boulder Clay is possibly pene-contemporaneous with the North Sea Drift (Cromer Till and Contorted Drift) of the Norfolk Coast—that is, while the North Sea ice was retreating from Norfolk, the inland ice may have been advancing towards Suffolk by way of the Fens.

separate boulder clays have long been known. At Sewerby, near Bridlington, the observed sequence is as follows :—

Gravel.	
Purple Boulder Clay.	
Basement Boulder Clay.	
Chalky Gravel.	
Blown Sand	} Banked against a buried cliff of chalk.
Rainwash	
Pebble beach	
Chalk.	

In Lincolnshire above the Purple Clay is found the Hesse Boulder Clay. We therefore have three boulder clays, the oldest of which, like the North Sea Drift in Norfolk, contains Scandinavian and igneous erratics, and rests on sands and gravels containing *Elephas antiquus*, *Hippopotamus amphibius*, *Rhinoceros megarhinus*, etc., the latter fauna being also found in East Anglia in the Cromer Forest Bed. The Purple and Hesse Boulder Clays, both containing chalk fragments, may thus correspond to the two varieties (if well established) of Chalky Boulder Clay in East Anglia.

The bearing of this glacial sequence on that based on the succession of early human cultures is dealt with by Mr. Moir (p. 260). Here it need only be remarked that the mammalian fauna of the Sewerby cliff gravel and the Cromer Forest Bed is that associated with Chellian implements, both at home and abroad; that the Acheulian culture is, according to the results of the Foxhall Road excavations, later than the Chalky-Kimmeridgian Boulder Clay; and that the Lower Mousterian cultures which are linked with a cold fauna abroad, are possibly connected with the intensely Chalky Boulder Clay in East Anglia.

My thanks are due to Mr. J. G. A. Skerf, B.Sc., of the Geological Department of the University of Liverpool, for much assistance in the laboratory during the examination and analysis of these deposits.

PART II.—AN ACCOUNT OF THE MANNER IN WHICH THE EXCAVATIONS, ETC., WERE CARRIED OUT, AND OF THE HUMANLY-FLAKED FLINTS, ETC., DISCOVERED.

By J. REID MOIR.

Professor Boswell having described in a very clear and able manner the geology of the deposits revealed in the excavation at Foxhall Road, Ipswich, it remains for me to give an account of the manner in which this excavation was conducted, and of the humanly-flaked flints, etc., there discovered. Before doing so, however, I would wish to express my thanks to Messrs. E. R. and F. Turner, Ltd., for so freely giving permission for the digging to be carried out, and for allowing all the relics found to be handed over to the Ipswich Museum. I have also to record my gratitude to Mr. A. S. Barnes for much help in examining the flaked flints recovered, and to Mr. E. T. Lingwood for so kindly drawing those selected for illustration in this paper. The wages of the two workmen employed in the excavation were paid by money generously provided by the Trustees of the Percy Sladen Memorial Fund, the Ipswich Corporation, Mr. Reginald A. Smith, Mr. A. S. Barnes, and Mr. Miles Burkitt.

The object of the digging was (a) to expose the layer of Boulder Clay recorded by Miss Layard¹ as occurring under the Palaeolithic beds at the Foxhall Road site, with a view to arriving at a decision as to the exact nature of this glacial accumulation; (b) to take note of the beds passed through in digging down to the boulder clay; and (c) to collect any humanly-flaked flints or other relics of man contained in these beds.

Unfortunately (as Professor Boswell has pointed out, p. 234), the first item of this programme was not carried out as was intended as, on reaching a depth of approximately 23 feet from the surface, the reddish loamy sand (No. 13 of table of strata, p. 234) was encountered and found to be so full of water as to make any further digging in a downward direction impossible. It was, however, decided to pierce this layer of waterlogged sand by means of a boring (an operation which was carried out successfully by a firm of Ipswich contractors), and, as has been stated (p. 234) Chalky-Kimmeridgic Boulder Clay was touched and penetrated to a depth of 2 feet 6 inches, at 28 feet 10 inches from the present surface of the ground. The second part of the programme was, however, carried out in its entirety and, it is hoped, successfully. The superficial area of the digging was 30 square feet, and the following simple method of excavation was adopted. Fortunately, at the site examined, the various beds were laid down in more or less horizontal sequence, and were defined quite clearly from each other. The procedure, therefore, was to remove and barrow away each stratum separately as the digging continued down-

¹ *Journ. Roy. Anthropol. Inst.*, vol. xxxiv, 1904.

ward, and to label carefully and preserve all the humanly-flaked flints occurring in the different layers. By such means, even if the flints from each stratum had presented a similar appearance, the exact horizon to which they belonged would have been definitely known. But the flints from one layer differ markedly in their appearance from those of another, and thus afford independent evidence, if such were needed, as to their *provenance*. Further, as will be shown, the technique of the implements and flakes from certain strata is of a widely different kind from that to be seen upon the implements and flakes of other strata. It can be stated, therefore, with much confidence that the exact horizon at which each one of the humanly-flaked flints found in the recent digging at Foxhall Road occurred, has been ascertained in a manner which leaves little or no loophole for mistake.

The archaeological richness of the site excavated may be judged when it is stated that no less than 544 examples of flint artefacts were found during the digging. And, as the progress of the works of Messrs. E. R. and F. Turner, Ltd. will preclude any further excavations at this spot, it is fortunate that the work was able to be carried out before the chance of doing so had finally disappeared. As will have been noticed, Professor Boswell states (p. 233) that the examination he made of the mineral composition of the Foxhall Road strata leaves no doubt in the mind of a worker on the petrology of sediments that the deposits are of glacial origin. This conclusion would appear to be supported by an examination of the 544 specimens of humanly-flaked flints recovered, which I carried out with a view to ascertain whether the flints exhibited striations upon their surfaces. This examination gave the following results (for identification of strata given in descending order in the following table, see section, p. 234):—

Deposit.	Number of Flints Found.	Percentage of Flints Striated.
		Per cent.
Bed No. 2	173	82
Bed No.	76	73
Beds Nos. 4 to 6	75	52
Bed No. 7	220	26
	544	—

It will thus be seen that in all the implementiferous strata examined (Beds Nos. 2 to 7) a considerable proportion of the flints recovered exhibited striæ upon their surfaces, and it may be said that these markings are generally found only upon the flaked surfaces of the specimens, and are of varying degrees of intensity. Further, the above table shows that the proportion of striated flints increases from Bed No. 7 (where it is 26 per cent.) to Bed No. 2 (where it has risen to 82 per cent.), a significant fact when taken in conjunction with Professor Boswell's opinion that

the contorted appearance of Bed No. 2 is in all probability due to the fact of the deposit having been frozen into the base of a moving ice-sheet. The striae upon the Foxhall Road flints are in some cases seen to be parallel to each other, and, on others, following erratic courses, so that a criss-cross effect is produced. The condition of the scratches, especially that of those upon the flints in Beds Nos. 2 and 3, lead me to believe that the markings were imposed *since* the beds were laid down. The striae upon the specimens found in Beds Nos. 4 to 7, which are to be seen almost exclusively upon only the older, derived flints, and not upon the unabraded implements and flakes from these horizons, appear on the other hand to have been "weathered out," showing that the specimens were scratched, then exposed to atmospheric conditions, and afterwards brought into the deposits where they are now found.¹

Before leaving this question of the striated flints found at Foxhall Road, it may be as well to point out that, so far as can be ascertained, the pressure to which they have been subjected has not resulted in the removal of flakes from any of the specimens.

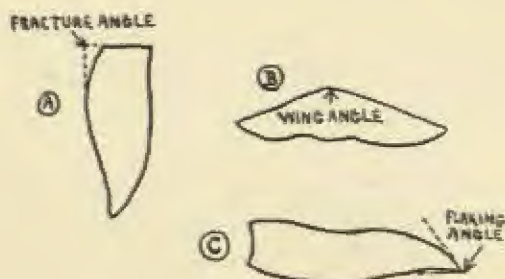
For a long time past I have held the view that the usual manner of describing flint implements, and of comparing them with others of similar types from different horizons and localities, is often of very small value. When the basis upon which such descriptions and comparisons are made it will usually be found that the *general form and outline* of the specimens are alone taken into account, while the *characteristics of the flake-scars which go to make that form and outline* are disregarded. I am quite well aware that due note must be taken of the form and outline of any flint implement, and that much information may be gleaned as to the cultural epoch to which the specimen is to be referred, by such a method. But, to confine attention solely to the form and outline is to see only half the picture. To visualize the whole it is necessary to proceed to an examination of the actual flake-scars exhibited by the specimen. Such an examination includes the use of an angle-measuring apparatus, by means of which it is possible to ascertain the manner in which the force responsible for the production of many of the flake-scars was directed. This method has been adopted where possible in regard to the flint implements and flakes described in this paper,² and it becomes necessary to give an explanation of some of the technical terms which will be used in describing the results obtained.

The "fracture angle" is the angle between the striking-platform (the approximately flat area produced so that flake-removing blows can be delivered upon it with precision) and a line 3 mm. long on the bulbar surface, measured from the point of impact. The bulbar surface is that upon which the curving

¹ For further details of the striation of flint surfaces see Moir, J. Reid, *Science Progress*, No. 44 (April, 1917), pp. 597-603.

² See also Moir, J. Reid, *Ipswich and District Field Club*, vol. vi (1921), pp. 1-14.

bulb of percussion, caused by a blow upon the striking-platform, is visible; while the point of impact is located at the apex of the bulb of percussion and indicates the spot where the flake-removing blow fell upon the striking-platform. The position of the fracture angle is shown diagrammatically in Fig. 2A, and will no doubt be readily understood. The "wing angle" is the angle made by the intersection of the bulbar surface with the striking-platform, and the point of impact lies at the apex of this angle. Fig. 2B shows the striking-platform in plan, and the position of the wing angle is clearly indicated. The angle at which the edge flaking on any particular implement or flake was removed, known as the "flaking angle," is that made between the surface of the flake-scars forming the cutting edge and the bulbar surface, and its position is shown diagrammatically in Fig. 2C. "Resolved flakes" are those which at the point of their final separation from the parent block of flint, exhibit a marked step or ledge. "Truncated" flake-scars are those which are encroached upon by others and are, therefore,



FIGS. 2A, B, C.

incomplete. "Incipient cones of percussion" are the result of blows falling upon a flint with insufficient force to break it, or to remove a flake. They represent the apices of cones of percussion formed in the flint, and are visible as complete or incomplete circles upon its flaked surfaces.

It may be said at once that although it is clear that the fracture angle, the wing angle, and the flaking angle have an intimate relationship to the flake-removing blows delivered upon a flint, and appear to differ in different Stone-Age "cultures," yet the exact nature of that relationship is not at present fully understood. But there would seem to be little doubt that the measuring and recording of the above-mentioned angles are of importance, and it is suggested that all flint implements and flakes discovered should be subjected to this, or to a more extended examination based upon similar lines.

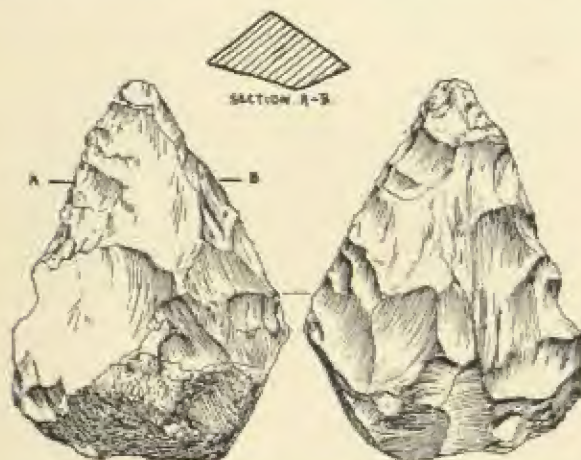
It is now possible to proceed to describe the various humanly-flaked flints, etc., discovered at Foxhall Road, and the specimens recovered from Bed No. 2 (see section, p. 234) will be described first, to be followed by those occurring in

Beds Nos. 3, 4, 5, 6 and 7. This latter deposit is the lowermost found to contain artefacts at the site excavated.¹

The Flint Implements and Flakes found in Bed No. 2.

In dealing with the artefacts found in such a deposit as Bed No. 2, composed of fine reddish gravel, with pockets of sand, and in which all the constituents are derived, it is necessary, in forming a judgment as to the approximate archaeological age of the accumulation, to select from the specimens collected those which (a) are least rolled and abraded, and (b) which also represent the latest cultural phase in the series. This procedure has been followed in regard to the specimens recovered from Bed No. 2, and it is proposed to describe the most recent artefacts first.

Figs. 3 and 3A.—This implement exhibits upon its upper surface (Fig. 3) a yellowish creamy colour, interspersed with dark brown areas having numerous yellowish creamy spots. This surface is composed of several truncated flake-scars



FIGS. 3 AND 3A.—MOUSTERIAN HAND-AXE FROM BED NO. 2, FOXHALL ROAD, IPSWICH. $\times \frac{1}{2}$.



FIG. 4.—MOUSTERIAN *racloir* FROM BED NO. 2, FOXHALL ROAD, IPSWICH. $\times \frac{1}{2}$.

(one of which is of thermal origin), while an area of unflaked cortex is observable at its lower extremity. The remains of one of the original striking-platforms produced in the primary stage of the manufacture of the implements is observable at its right-hand lower angle. The two longer edges of the upper surface have been modified by the removal of numerous flakes, many of which are seen to be resolved.

The upper surface of the specimen is more or less gabled, and in this respect contrasts with the lower surface (Fig. 3A) which is much flatter. This latter surface exhibits

¹ In the sandy surface soil (Bed No. 1 section, p. 234) was found one unabraded, unpatinated flake. It is $2\frac{1}{2}$ inches long by $\frac{1}{2}$ inch wide, and was struck from a bull-head flint. The finding of this specimen brings up the total of artefacts to 545.

flake-scars of the same general colour as those forming the upper surface, and moreover, of the same type. The flaked areas of the specimen carry neither incipient cones of percussion, nor striæ, and the flake-scars are all of one period. The implement is very little abraded, and there can be little doubt that this specimen is a very good example of an early Mousterian "hand-axe." It corresponds closely both in form and technique to implements of this epoch figured by Combert in *Les Hommes contemporains du Renne* (Fig. 86, top row). Further, it may be pointed out, that one of the lower angles of the specimen is rounded, whilst the other is blunt, a feature, as recorded by Mr. Reginald Smith (*Archæologia*, vol. lxvii, pp. 27-48), prevalent in certain Mousterian implements.

Fig. 4.—This specimen is made from a flake exhibiting on its upper surface an oval-shaped patch of cortex, and one or two truncated flake-scars. The longer edges of the implement have been modified by the removal of numerous flakes, many of which are seen to be resolved. The lower surface is composed of one area of fracture carrying a well-formed and prominent bulb of percussion due to a blow falling upon a faceted striking-platform. Both the upper and the lower surfaces exhibit a few thin striæ, but no incipient cones of percussion. The specimen is little abraded, and its flaked areas, which are all referable to one period, are of a yellowish-creamy colour. The implement may be regarded as a double *racloir*, or *pointe* of the Mousterian epoch, and it will be noticed that, as with the specimen illustrated in Figs. 3 and 3A, one of its lower angles is rounded while the other is blunt.

Fig. 5.—This implement is made from a flake exhibiting upon its upper surface a more or less central ridge and some truncated flake-scars. The two longer edges of this surface have been modified by the removal of numerous flakes, a large number of which are seen to be resolved. The lower surface is composed of one plain area of fracture, the bulb of percussion of which has been removed in the further shaping of the implement. Both the upper and the lower surfaces exhibit a number of small striæ, but no incipient cones of percussion. The specimen is little abraded, and its flaked areas, which are all referable to one period, are of a yellowish-creamy colour. The implement may be regarded as a double *racloir* of the Mousterian period.

Fig. 6.—This specimen is made from a flake exhibiting on its upper surface one large truncated flake-scar, while its longer edge has been modified by very regular secondary flaking. The blows responsible for the formation of this edge were of the kind giving rise to the detachment of resolved flakes. The lower surface is composed of one truncated area of fracture due to percussion, and carries a few small striæ. No incipient cones of percussion are observable upon the specimen, which is little abraded. The flaking, which is all referable to one period, is of a mottled, brownish-yellow colour. The implement may be regarded as a *racloir* of the Mousterian period.

Fig. 7.—This implement is made from a flake struck from a previously prepared core. The upper surface is composed of six truncated flake-scars, and its longer edges have been modified by the removal of numerous small flakes. The lower surface is composed of one fracture area, carrying a well-formed and prominent bulb of percussion. The flake-scars of the specimen are of a yellowish-creamy colour, and exhibit a number of small striæ. The pressure giving rise to these appears to have been the cause of the removal, in places, of the patinated surface. No incipient cones of percussion are visible upon any portion of the specimen, which is little abraded, and the flaking is all referable to one period. The implement may be regarded as having been made from a *Levallois* flake, and as typical of the Mousterian period.

No cores or hammer stones were found in Bed No. 2, but several examples of flints reddened and crackled by fire were recovered from it.



FIG. 5. — MOUSTERIAN DOUBLE *racloir* FROM BED NO. 2, FOXHALL ROAD, IPSWICH. $\times \frac{1}{2}$.



FIG. 6. — MOUSTERIAN *racloir* FROM BED NO. 2, FOXHALL ROAD, IPSWICH. $\times \frac{1}{2}$.



FIG. 7.—MOUSTERIAN FLAKE-IMPLEMENT FROM BED NO. 2, FOXHALL ROAD, IPSWICH. $\times \frac{1}{4}$.

The artefacts found in association with, and more ancient than, the Mousterian specimens were not very numerous. Most of these older pieces are not assignable to any definite prehistoric culture, but the occurrence of some striated and abraded Chellean hand-axes in the gravel are of significance and must be recorded. It was found that eleven of the flakes of Mousterian age found in Bed No. 2 possess faceted striking-platforms, and the following comparison of the average fracture angle and the wing angle of twenty of the above-mentioned flakes, with twelve others from Le Moustier, La Quina, and other well-known Mousterian stations in France, may be of interest.

Deposit.	Number of Flakes.	Fracture Angle.	Wing Angle.
Bed No. 2	20	120°	134°
Le Moustier, La Quina, etc. ...	12	120°	139°

This comparison shows a remarkable similarity between the fracture angles and the wing angles of the two series of flakes, and affords further evidence in support of the opinion, based upon the form and flaking of the specimens illustrated in Figs. 1 to 5, that these specimens are referable to the Mousterian period.

An examination showed that 74 per cent. of the flakes from Bed No. 2 exhibited secondary working along their edges.

Bed No. 3 is a stony, reddish, mottled, sandy clay with grey patches (see Section, p. 234), and was called "pug" by the workmen engaged in the digging at Foxhall Road. There would appear to be not much doubt that Bed No. 3 is incorporated with the reddish gravel (Bed No. 2) that overlies it. From a prolonged examination of these two deposits I have formed the opinion that the "pug" is in reality the upper part of the brickearth series (Beds Nos. 4, 4A, 5 and 6) disturbed and partly reconstructed by the agent responsible for the contortion of these higher beds (Beds Nos. 2 and 3). This view is strengthened when an examination is made of the flint implements and flakes found in the "pug." These are seen to be a mixture of the types occurring in Bed No. 2 and in the brick-earth underlying the "pug" (Bed No. 3). As this is the case, and in view of the poor quality of the specimens recovered from this deposit, it is not necessary to describe any of them in detail.

Flint Implements and Flakes found in Beds Nos. 4 to 6.

The implements and flakes found in Beds Nos. 4 to 6 are without question of the same types, and exhibit an almost identical technique and condition. The specimens, though quite unabraded, occurred at different levels in these beds; and, as no definite "floors" or occupation levels were found, it is presumed that the ancient flint flakers were living upon a side of a pond or small lake in which flooding, and periodical depositions of fine silt were taking place. Such flooding and deposition would cover up any specimens left upon the banks of the lake, but the hunters would return and leave other implements upon the newly formed shore. As the specimens found in the Beds Nos. 4 to 6 are, as has been stated, referable to the same cultural phase, they will here be referred to as coming from the "brick-earth series," a method which will have the merit of simplicity and, in this case, may be regarded as quite satisfactory.

Figs. 8 and 8A.—This specimen is made from a flint such as occurs in quantity in what is known as the "Middle" glacial gravel of the Ipswich district. This type of flint is peculiar, and has been described by me in one of my published papers.¹ The upper surface of the implement (Fig. 8) is composed of a number of finely produced, small and regularly placed flake-scars. Towards the lower right-hand side is preserved a portion of one of the original striking-platforms produced in the initial shaping

¹ Moir J. Reid, *Journ. Roy. Anthropol. Inst.*, vol. xlix (1919, January to June), p. 77.

of the block of flint from which the specimen was formed. The side view (Fig. 8A) shows one of the thin, and more or less straight edges, and will enable the reader to appreciate the dexterity with which the implement was made. The lower surface exhibits flake-scars somewhat larger than those composing the upper surface, while the butt end of the specimen, though thick, is provided with a cutting edge. The implement, which is of a roughly rhomboidal section, exhibits upon its flaked areas a chestnut-brown colour interspersed with white, blue, and purple areas. No striæ, nor incipient cones of percussion, are observable upon any portion of the specimen, which is quite unabraded. Its flake-scars are all of one period, and the implement may be regarded as a well-made example of Late-Acheulean workmanship.



FIGS. 8 AND 8A.—LATE ACHEULEAN HAND-AXE FROM BRICKEARTH SERIES, FOXHALL ROAD, IPSWICH. $\times \frac{2}{3}$.

Figs. 9 and 9A.—This specimen, which shows a roughly rhomboidal section, is formed from a bull-head flint and is beautifully made. Both upper and lower surfaces exhibit the honey colour of the original flint, showing through a thin film of bluish-white. The upper surface (Fig. 9) is composed of a number of finely produced and regularly placed flake-scars, and carries neither striæ nor incipient cones of percussion. The side view (Fig. 9A) shows one of the slightly twisted edges of the specimen. The lower surface is composed of flake-scars somewhat larger than those exhibited by the upper surface, but is equally devoid of incipient cones of percussion and striæ. The butt end of the implement is formed of unflaked cortex. The specimen, of

which the flaking is all of one period, is quite unabraded, and may be regarded as a very fine example of Late Acheulean technique.

Fig. 10.—The implement which, towards its point, is gabled upon its upper surface, and approximately flat upon the lower, thus exhibiting a roughly triangular section, was made by dexterous blows removing small flakes. The longer edges of the upper surface have been modified by the removal of numerous flakes, many of which, especially upon the right-hand side, are resolved. The flaked areas of the specimen exhibit the unchanged yellowish-brown colour of the original flint, and carry neither striæ nor incipient cones of percussion. The implement, which has a patch of cortex present at the left-hand lower angle of the upper surface, is quite unabraded, and its flake-scars are all referable to one period. The butt end



FIGS. 9 AND 10.—LATE ACHEULEAN HAND-AXE FROM BRICK-EARTH SERIES, FOXHALL ROAD, IPSWICH. $\times \frac{2}{3}$.

is thick though flaked, and the specimen may be regarded as a good example of Late Acheulean workmanship.

Fig. 11.—This specimen is formed from a "Middle" glacial flint, and exhibits a roughly rhomboidal section. Both the upper and lower surfaces are of a chestnut-brown colour interspersed with cherty patches of a lighter shade. The implement has been made by blows removing small flakes, and no incipient cones of percussion, nor striæ, are observable upon any portion of it. At the lower left-hand angle of the upper surface a more or less flat striking-platform is preserved, indicating that the implement was in all probability made from a flake. The specimen is quite unabraded (the flaking is all of one period), and it may be regarded as a typical example of a Late Acheulean ovate.

Associated with these well-made hand-axes (Figs. 8, 8A, 9 and 9A, 10, 11) in the brickearth series, were found some less elaborately made and "simpler" implements. There can be little doubt that such specimens occur in most deposits in which the more finely finished and much-sought-after hand-axes are found; but, unfortunately, these more rudimentary implements, if found, are seldom if ever figured by archaeologists.¹ The result of such neglect is to foster in some minds the idea that the makers of the hand-axes made no other form of implement, and to perhaps induce them to refuse to believe in the human origin of certain other specimens pre-dating the Lower Palæolithic industries, but of similar form and flaking to the ruder implements of these cultures. With a view to dispelling the idea that the hand-axes were the only type of implements made in Lower Palæolithic times, the following specimens are figured and described:—



FIG. 10.—LATE ACHEULEAN HAND-AXE FROM BRICK-EARTH SERIES, FOXHALL ROAD, IPSWICH. $\times \frac{2}{3}$.

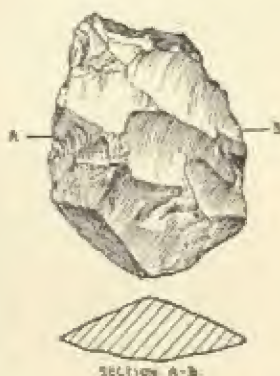


FIG. 11.—LATE ACHEULEAN OVATE FROM BRICK-EARTH SERIES, FOXHALL ROAD, IPSWICH. $\times \frac{2}{3}$.



FIG. 12.—SMALL CHOPPER FROM BRICK-EARTH SERIES, FOXHALL ROAD, IPSWICH. $\times \frac{1}{2}$.

Fig. 12.—This specimen is made from a pebble of flint with a whitish cortex, derived probably from the "Middle" glacial gravels. The flaked areas exhibit a chestnut-brown colour and carry neither striæ, nor incipient cones of percussion. The upper surface is flaked in a very similar manner to the lower, and it would appear that the implement is a small chopper, the sharp cutting edge being opposed by the rounded cortical surface of the pebble, which affords an excellent handgrip. The flake-scars of the specimen, which are quite unabraded, are all referable to one period.

Fig. 13.—This implement is made from an ancient, flaked specimen, and exhibits, upon its upper surface, an area of cortex, and a flake-scar of a bluish-grey colour which is considerably striated. The right-hand side of the upper surface has been modified by flaking giving rise to an engraved cutting edge. The flake scars of

¹ Miss Layard described a number of such specimens found by her at the Foxhall Road site, *Journ. Roy. Anthropol. Inst.*, vol. xxxvi (1906).

this edge are of a light chocolate-brown colour quite comparable with that exhibited by many of the hand-axes from the brickearth series, and there can be little doubt that this *racloir*, or side-scraper, is of the same period. The lower surface is composed chiefly of an ancient and striated flake-scar of a bluish-grey colour, encroached upon in places by one or two later fractures. The later flaking on both surfaces of the specimen carries neither striae nor incipient cones of percussion. The specimen is made from what appears to be a "Middle" glacial flint.

Fig. 14.—This specimen is made from a flake, and exhibits upon its flaked surfaces a greenish-yellow colour with a purplish hue in places. The upper surface is composed of several flake-scars, and its left-hand edge has been modified by the removal of numerous flakes, some of which are resolved. The lower surface exhibits an approximately flat striking-platform, two bulbs of percussion (one of which carries an *écaillage*). The implement may be regarded as a *racloir*, and its flaked surfaces, which are unabraded and are referable to one period, show neither striae nor incipient cones of percussion.



FIG. 13.—LATE ACHEULEAN *racloir* FROM BRICKEARTH SERIES, FOXHALL ROAD, IPSWICH. $\times \frac{2}{3}$.



FIG. 14.—LATE ACHEULEAN *racloir* FROM BRICKEARTH SERIES, FOXHALL ROAD, IPSWICH. $\times \frac{1}{2}$.

It was found that none of the flakes from the brickearth series exhibited faceted striking-platforms, while the average Fracture angle and Wing angle of the specimens are as follows:—

Deposit.	Number of Flakes.	Fracture Angle.	Wing Angle.
Brickearth series	12	124°	148°

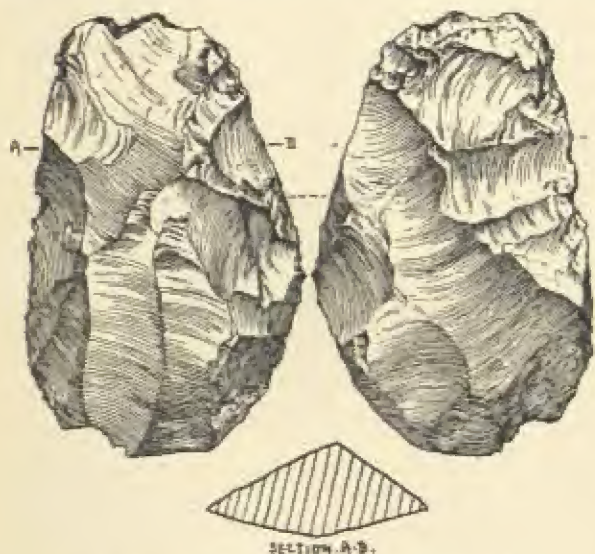
An examination of the flakes from the brickearth series established that 71 per cent. exhibited secondary working along their edges. The derived flints of human manufacture found in the brickearth series were few in number and primitive in

type. The great majority of them appear to have been derived from the "Middle" glacial gravel, which seems to have furnished most of the raw material used in the manufacture of the hand-axes and other implements in the brickearth.

The forms and flaking of the brickearth specimens are such as were produced in Late Acheulean times, and I have no hesitation in referring these implements to that cultural phase.¹ Several burnt flints were found in association with these implements.

The Flint Implements and Flakes found in Bed No. 7.

The great proportion of the least ancient specimens found in Bed No. 7 are made, principally, from a yellowish-black flint with a white cortex, and their flaked areas have not suffered any colour change. The implements and flakes are quite sharp; and, as they were found distributed through the thickness of Bed No. 7, it would



FIGS. 15 AND 15A.—LOWER ACHEULEAN HAND-AXE FROM BED NO. 7, FOXHALL ROAD, IPSWICH. $\times \frac{1}{2}$.



FIG. 16.—LOWER ACHEULEAN racloir FROM BED NO. 7, FOXHALL ROAD, IPSWICH. $\times \frac{1}{2}$.

seem that their makers occupied a land surface liable to flooding by water and the deposition of gravelly and sandy loam. But the discovery of such a large number of unabraded flakes and cores, together with four quartzite hammer stones, makes it highly probable that an actual workshop site existed at the horizon represented by Bed No. 7. The occurrence, too, in this deposit of a number of burnt flints supports this conclusion. It was in this bed that a small and quite unidentifiable piece of bone was discovered, the only example of organic remains met with in the digging.

Figs. 15 and 15A.—This specimen, which exhibits upon its flaked areas the yellowish-black colour of the original flint, has been formed by the dexterous

¹ This conclusion is supported by the implements previously found by Miss Layard and Mr. Reginald Smith at the Foxhall Road site.

removal of somewhat long flakes. Both its upper (Fig. 15) and lower surfaces (Fig. 15A) show flake-scars of a similar character, and carry neither striae nor incipient cones of percussion. All the flaking is of one period, and the implement, which is flatter upon the lower surface than upon the upper, is quite unabraded. It is in all probability referable to Lower Acheulean times.

There were no other implements of this order found in Bed No. 7, but several specimens of a more primitive type, but of the same cultural period, were discovered, and some of them are here illustrated and described.

FIG. 16.—This specimen exhibits upon its upper surface a large area of cortex, and also two truncated flake-scars. The right-hand side of this surface shows steep edge flaking. The under surface is composed of one plain area of fracture with approximately flat striking-platform, a well-formed bulb of percussion, and *écaillage*. The flaked areas of the specimen, which are all of one period, exhibit the original brownish-black colour of the original flint, and show neither striae nor



FIG. 17.—LOWER ACHEULEAN *racloir* FROM BED NO. 7, FOXHALL ROAD, IPSWICH. $\times \frac{3}{4}$.



FIG. 18.—LOWER ACHEULEAN SCRAPER FROM BED NO. 7, FOXHALL ROAD, IPSWICH. $\times \frac{3}{4}$.

incipient cones of percussion. The implement is quite unabraded, and may be regarded as a Lower Acheulean *racloir*.

FIG. 17.—This specimen is made from a flake and exhibits upon its upper surface two truncated flake-scars and a patch of cortex at the upper end. The right-hand edge has been modified by the removal of a number of small flakes so that a very even cutting edge has resulted. The lower surface shows one plain area of fracture produced by a blow falling upon a thermally weakened flint. The flaked areas of the implement exhibit the unchanged black of the original flint, and carry neither striae, nor incipient cones of percussion. The flaking is all of one period and the specimen, which is quite unabraded, may be regarded as a *racloir* of Lower Acheulean times.

FIG. 18.—This specimen exhibits upon its flaked areas the blackish-yellow of the original flint, and is quite unabraded. The upper surface shows three truncated flake-scars probably of thermal origin, and a scraping edge formed by dexterous and regular flaking. The under surface is composed of one plain area of thermal

fracture. No striæ, nor incipient cones of percussion, are visible upon any portion of the implement, which may be regarded as a scraper of Lower Acheulean times.

FIG. 19.—This specimen, which is obviously a core from which flakes have been struck, is made from a blackish-yellow flint exhibiting, on one portion, an abraded and very ancient flake-scar. Otherwise the flint is quite unabraded and shows neither striæ nor incipient cones of percussion. It is without much doubt referable to Lower Acheulean times.

FIG. 20.—This specimen, which represents another Lower Acheulean core, exhibits upon its flaked areas the black colour of the original flint. It will be noticed (Fig. 20) that, unlike the flint illustrated in Fig. 19, the greater proportion of the flakes have been removed in one direction only. No striæ, nor incipient cones of percussion, are observable upon the later flaking of the specimen, but at one portion it shows some very ancient and abraded flake-scars.



FIG. 19.—LOWER ACHEULEAN CORE FROM BED NO. 7, FOXHALL ROAD, IPSWICH. $\times \frac{1}{2}$.

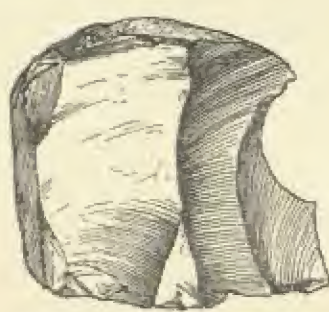


FIG. 20.—LOWER ACHEULEAN CORE FROM BED NO. 7, FOXHALL ROAD, IPSWICH. $\times \frac{1}{2}$.

It was found that four of the flakes from Bed No. 7 exhibited faceted striking-platforms. The average fracture angle and wing angle of the series are as follows:—

Deposit.	Number of Flakes.	Fracture Angle.	Wing Angle.
Bed No. 7	44	127°	148°

An examination of the flakes from Bed No. 7 established that 78 per cent. possessed secondary working along their edges. The deposits occurring between Bed No. 7 and the underlying Chalky-Kimmeridgian Boulder Clay were, so far as my observations went, non-implementiferous. It is, however, impossible to speak with certainty on this point regarding Bed No. 13, as this deposit was only bored through and not dug. But, from its appearance at the surface, and an examination of the material brought up by the bore, I should doubt whether it contained flints of any

kind. It would appear that the excavation at Foxhall Road has definitely established at this site that (a) the Acheulean period was succeeded by the Mousterian, and (b) that this latter cultural phase was associated with glacial conditions.

Professor Boswell has stated that the bearing of the glacial sequence in East Anglia upon the succession of human cultures will be dealt with by me. The result of my researches has been to compel me to relegate the Early Chellean implements to the Cromer Forest Bed of Norfolk. This deposit is overlain by the North Sea Drift, which, as Professor Boswell points out, is possibly pene-contemporaneous with the Chalky-Kimmeridgic Boulder Clay found beneath the Palaeolithic deposits at Foxhall Road and elsewhere. To the deposits—gravels, sands, and brickearths—which are later in date than either the Chalky-Kimmeridgic Boulder Clay and the North Sea Drift, I would relegate the (?) Late Chellean, Acheulean, and Early Mousterian cultures. After these cultural phases had passed away there is no question but that glacial conditions once more obtained in East Anglia. At the Foxhall Road site the result of these conditions is seen in Beds Nos. 2 and 3, in which the latest humanly-flaked flints are of the Mousterian period. At other sites near Ipswich these conditions would appear to have resulted in the deposition of the intensely Chalky Boulder Clay to which Professor Boswell refers.

An examination of this glacial accumulation has shown that, like Bed No. 2 at Foxhall Road, it too contains Mousterian implements, and I am constrained, therefore, to regard these beds as contemporaneous. The Palaeolithic deposits at Foxhall Road are, therefore, in all probability intermediate in age between the Chalky-Kimmeridgic Boulder Clay and the intensely Chalky Boulder Clay of East Anglia. The actual discoveries, other than those recorded in this memoir, upon which the above conclusions are based are recorded in a number of papers to which I give reference below.¹

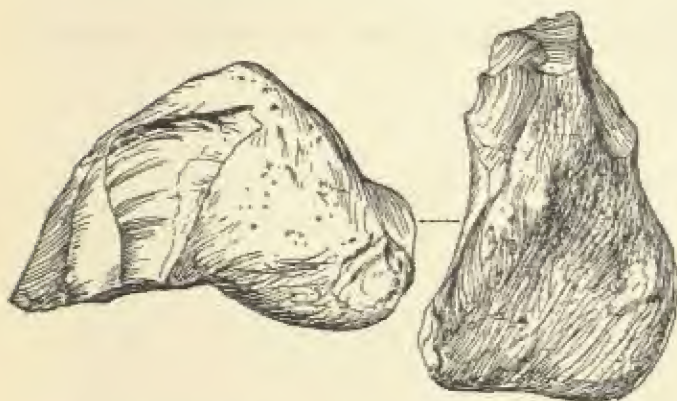
It is of interest to note that, out of the 545 (this number includes the flake found in the surface soil) humanly-flaked flints discovered in the Foxhall Road excavation, only 48 were finished implements.

In one of my published papers² I showed that, in all probability, the well-known platessiform and batiform Palaeolithic implements (hand-axes) were developed from the rostro-carinate implements such as are found beneath the Red and Norwich Crags; and it is of much interest to me to find that, on examining the rougher material from the deposits at Foxhall Road, there is present much evidence in support of my contention. The specimen illustrated in Figs. 21 and 21A is from

¹ Moir, *Proc. P.S.E.A.*, vol. iii, Part II, pp. 219-243. Moir, *Journ. Roy. Anthropol. Inst.*, vol. xlix (1919, January to June), pp. 74-93. Moir, *Journ. Roy. Anthropol. Inst.*, vol. l (1920, January to June), pp. 135-152. Moir, *Journ. Roy. Anthropol. Inst.*, vol. li (1921, July to December), pp. 385-418. Moir, *Man*, vol. xxii, (March, 1922), No. 23, pp. 34-36. Moir, *Proc. P.S.E.A.*, vol. iii, Part IV, pp. 559-579. Moir, *Journ. Soc. Antiqs.*

² Moir, *Phil. Trans.*, Series B, vol. cccxxix, p. 350.

Bed No. 7. It represents a partly finished Acheulean hand-axe, but in its present form it is without question a rostro-carinate. Two views of the flint are given, viz., the left lateral (Fig. 21) and the dorsal (Fig. 21A). The ventral plane is a plain area of fracture due to percussion.



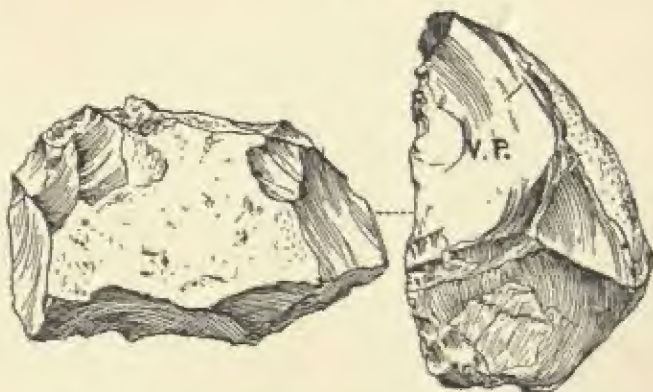
FIGS. 21 AND 21A.—PARTLY-FINISHED HAND-AXE, OF ROSTRO-CARINATE FORM, FROM BED NO. 7, FOXHALL ROAD, IPSWICH. $\times \frac{2}{3}$.



FIGS. 22 AND 22A.—PARTLY-FINISHED HAND-AXE, RETAINING LARGE STRIKING-PLATFORM (P IN FIG. 22A), FROM BED NO. 7, FOXHALL ROAD, IPSWICH. $\times \frac{1}{2}$.



FIGS. 23 AND 23A.—PARTLY-FINISHED HAND-AXE, RETAINING LARGE STRIKING-PLATFORM (P IN FIG. 23A), FROM BED NO. 7, FOXHALL ROAD, IPSWICH. $\times \frac{2}{3}$.



FIGS. 24 AND 24A.—PARTLY-FINISHED HAND-AXE, OF ROSTRO-CARINATE FORM, FROM BECKEARTH SERIES, FOXHALL ROAD, IPSWICH. $\times \frac{2}{3}$.

Figs. 22 and 22A illustrate a partly-finished hand-axe from Bed No. 7, which exhibits a large striking-platform (the equivalent of either the dorsal or ventral plane of the rostro-carinate) still preserved. This striking-platform is marked P in Fig. 22A.

The specimen illustrated in Figs. 23 and 23A was found in Bed No. 7, and is an even better example than that shown in Figs. 22 and 22A of a partly-finished hand-axe, in which practically the whole of one striking-platform is preserved. This platform is marked P in Fig. 23A.

Fig. 24 and 24A illustrate two views of a rostro-carinate (with ventral plane, V.P., Fig. 24A, right lateral surface, Fig. 24, and carina), found in the brickearth series at Foxhall Road. Though of the rostro-carinate form it is without much doubt a hand-axe in course of manufacture.

SCHIPENITZ: A LATE NEOLITHIC STATION WITH PAINTED POTTERY IN BUKOWINA.

[WITH PLATES XIV-XVIII.]

By V. GORDON CHILDE.

THE famous black-earth belt of South-Eastern Europe, like the corresponding loess region of the Danube valley, was the centre of a brilliant neolithic culture distinguished by a remarkable clay plastic and a richly-painted pottery. This culture has come increasingly into prominence in recent years, especially owing to the connections which its characteristic pottery shows, or is supposed to show, with that of the Ægean; but no complete illustrated account of the material has been easily accessible to students in this country. Apart from Minn's summary of Chvojka's work on the Dniepr,¹ such full reports as exist are mostly scattered about among Russian and Polish periodicals, which are not generally available here. Now, thanks to the courtesy of the directors of the Prehistoric Department of the Naturhistorisches Museum at Vienna, I am enabled to publish a representative selection of the documents from a typical station of the culture in question—Schipenitz in Bukowina—which have for many years been in the possession of that museum.

Distribution.—The stations which have yielded the painted pottery extend from the banks of the Dniepr, near Kiev, right across Podolia and Bessarabia to Buczacz and Koropiec in Galicia, and the head waters of the Pruth in Bukowina. The sites are confined to the area of the fertile black-earth, and all lie to the north of the South Russian steppe that borders the Black Sea and south of the forest region of Volhynia and Northern Galicia. Outside this area, however, are three groups of sites with painted pottery which give indications of relation to the culture of the black-earth belt. These are: (1) an East Balkan group extending from Czernavoda, in the Dobrudja, as far west as Craiova, in Wallachia,² and southward through the valleys of Eastern Bulgaria, right down into Eastern Macedonia³; (2) a Thessalian group represented by Rakhmani and Dimini, which seems to have expanded southward, since similar pottery appears at Gonia near Corinth⁴; and finally (3) a Transylvanian enclave on the upper reaches of the Alt, near Brassó

¹ *Scythians and Greeks*, pp. 133 ff.

² The material is at Berlin.

³ *Cl. Men*, January, 1923, No. 2.

⁴ *J.H.S.*, xlii, pp. 254 ff.

and Bileze Złota, Kapuscińce, Czortowiec, Włynanka, Wasyłkowce and other sites in Galicia¹; and (3) a North-Western Group, represented by Koszyłowiec, near Tłuste², and Buczacz. The pottery of Schipenitz is typical only of the Central Group; in the Tripolye culture incised and grooved ware predominates over the painted fabrics, while in the west there is a use of red and white paint which cannot be paralleled at Schipenitz.

Cutting across this geographical division is a chronological classification. At Cucuteni, the only station where a stratification has been found—or, at any rate, recorded—two superimposed culture levels were distinguished. The pottery of the older settlement showed polychrome decoration in brownish-red outlined with black paint on a white ground. The basic design—an horizontal S spiral—was left reserved in the painted field. The forms, as illustrated in the show-cases at Berlin, were deep cups with rounded bottoms, bottles with lug handles and sometimes a hollow-ring foot, craters, and fruit stands. The first two forms might possibly be derived from the hemispherical bowl and the so-called "butte" respectively of the oldest Danubian culture. A few sherds and one complete vase of typical *Bandkeramik* form and decoration were also found in this stratum.³ The pottery of the later settlement is in every respect similar to that from Schipenitz and the allied stations. The sites on the Dniepr were also divided into two chronological groups by Chvojka. The one (B) yielded no metal or bored axes, but painted pottery of the Schipenitz style. Celts and axes of pure copper are found in the sites of group A, together with grooved pots with rich spiral decoration, but the figurines are inferior. Chvojka's division is not in all respects satisfactory, but it is at least probable that we should recognize the existence on the Dniepr of two phases of culture, one of which is strictly parallel to that illustrated by Schipenitz.

Architecture.—The painted pottery is generally found in rectangular huts of wattle and daub. At Erösd, in Transylvania, the house type was a *megaron*, with porch-entrance on the small side. At the fortified station of Cucuteni no architectural details could be discerned, but in the Kiev Government two types of structure have been fully described.⁴ The first type, called by the Russians "*zemlyanky*," were hollowed out to a slight depth, generally about 0.60 m., in the ground and covered over with wattle and daub. The interior consisted of two parts at different levels—a higher and larger, which served as living or sleeping room, and a sort of large *bothros*, in which stood a stove and which served for the preparation of food; for the floor of the *bothros* was covered with shells and other

¹ *Zbiór Wiadomości, Kraków* xiv, xv, xvi and xviii (Zb. W.), and *Materiały arch.-antrop. etnograf.*, iv, pp. 100 ff. (Mat. a.-n.).

² Hadaczek, *La Colonie industrielle de Koszyłowiec, Album des Fouilles*; cf. also *Archiwum Naukowe*, v, pp. 420 ff. The material labelled "Kostowiec" in the Ashmolean Museum at Oxford really comes from this site.

³ *Zeitschr. f. Ethnol. i.c.*, Fig. 2 (3).

⁴ *Zapiski, i.c.*, *Izvestia imp. arch. Kommissiya*, xii (Kolodistoe).

kitchen refuse (Fig. 2). Similar structures containing stone ovens, but no *bothroi*, have been recently detected by Prof. Kozłowski at Buczacz, in Galicia.

More common were the so-called "*plashchadki*," which have been described at Petreny and on the Dniepr. The remains of these structures are represented by areas covered with one or more layers composed of lumps of burnt clay, which often preserve the impress of poles and traces of painting. The accounts of Chvojka and von Stern give the impression of rectangular huts, but no hearths or ovens could be detected, and the details of the construction are uncertain. The areas at Petreny measure from 10×5 to 14×8 ms. square; some in the Kiev Government are

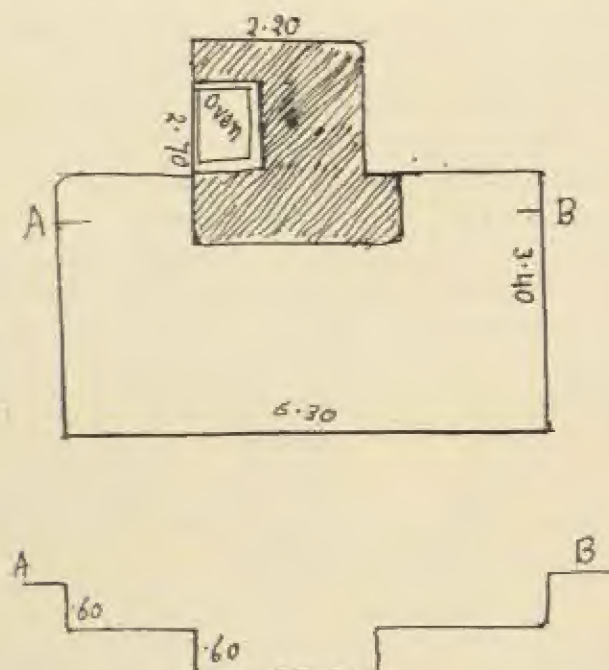


FIG. 2.—ZEMLVANSKY, NEAR RZHESSHEV, AFTER CHVOJKA.

smaller, but one at Urocziszcze Dolzhuk is said to have attained an area of 21×16 ms. As Ailio remarks,¹ such large areas can hardly have been covered by a single roof. At Koszytowiec Prof. Kozłowski and the author recently explored just such a layer of burnt clay as those described by Chvojka, but failed to detect any definite form or any trace of post holes in the underlying loess. The question is only complicated by the highly ambiguous hut models published by Majewski² and Ailio.³ These stand on four or six short legs, suggesting that they represent some sort of pile-dwelling, and the utter disorder of the lumps of clay forming the folds⁴ of a *plash-*

¹ *Fragen der russischen Steinzeit*, p. 90.

² *Swiatocit*, xiii. This work is not obtainable in England.

³ *Op. cit.*, Fig. 27.

chadka might be explicable through the collapse of such an erection. On the other hand, the legs of the model may not be copies of any part of the original, and authorities are not agreed as to whether the models, which are open above, represent a hut with the roof removed to reveal the interior and an oven to the right of the door, or a fenced platform with a very small hut to the right of the entrance. In any case, the theory of Chvojka and von Stern that the *ploshchadki* were mortuary houses cannot survive the criticisms of Hadaczek, Kossinna, Ailio and Schuchardt.¹

It may be remarked that at Buczacz ovens were found outside the main huts. At Koszyłowce, while we could not determine the outline of any huts, we discovered a large number of subterranean ovens, hollowed deep in the loess, and several small rubbish pits. The so-called "brick graves" of Ossowski were probably subterranean ovens similar to the above.

From Schipenitz we have little new data. Most of our finds are due to amateur excavations carried out by the landlord, von Kostin, and the local schoolmaster, Areyczuk. In 1893, however, Hofrat Szombathy was able to recognize the outlines of three rectangular huts, with remains of burnt plaster. He also found an oven "30 cm. below the level of the prehistoric settlement," evidently just like those of Koszyłowce.² What Kaindl in 1904 regarded as a cremation deposit was, in all probability, another such oven.³

THE POTTERY OF SCHIPENITZ.

By far the most interesting documents of this culture at Schipenitz, as elsewhere, consist in the large series of vases which the site has yielded. Apart from a few wheel-made Slavic sherds⁴ and the ware with white paint classed as D below, which comes from one particular point at the site, the pottery from Schipenitz preserved at Vienna is remarkably uniform in character, and gives no evidence of development or degeneration. Moreover, it exhibits in every respect the closest analogies to the pottery from a single period at Cucuteni, as well as to that of Petreny, where the material was likewise unitary. For these reasons we shall probably be justified in assigning the whole material to a single cultural epoch, even though stratigraphical data are lacking. Within this material three wares may be distinguished—a well-burnt reddish fabric in two varieties, painted and unpainted (Wares A and B), and a small amount of coarse, mud-coloured pottery, sometimes with rude incised designs (Ware C).

¹ *Album*, p. 7; *Monnus*, i, p. 227; *op. cit.*, p. 90 f.; *P.Z.*, 1921-2, pp. 168 ff.; *cf. also* Minns, *loc. cit.*, and my remarks in *J.H.S.*, xlii, p. 267.

² *Jahrbuch des Bukowina Landesmuseum*, 1894, pp. 115 ff.

³ *Jahrbuch der k.k. Zentral Kommission Wien*, i, pp. 97 f.; ii, pp. 26 ff.

⁴ The exclusion of these is justified by Prof. H. Schmidt's observations at Cucuteni and my own experience at Koszyłowce this summer, where similar sherds occurred, but only in the uppermost 20 cm., while the mass of the painted sherds lay at a depth of over 40 cm.

Ware A.—The typical pottery from Schipenitz is well burnt and made from carefully levigated clay. The biscuit is generally reddish, and even large, thick sherds are burnt throughout. Two techniques may be distinguished in connection with the preparation of the surface. In technique 1 the paint is applied directly to the polished surface, which varies in colour from deep red to yellow. In the alternative category (technique 2) a slip is employed. The latter varies from brown to creamy white. Some of the light slips are so thin as to resemble a paint-wash. The surface is usually polished in this technique also. The above description might serve as a translation of von Stern's account of the surfaces of the Petreny vases. In Chvojka's culture B, an orange or dark buff surface was the rule, but this was sometimes due to a slip. Both techniques occur at Popudnia and in the Galician sites of the Bileze group. On the other hand, in the pottery of Cucuteni II, a light, almost white, surface was preferred, and is generally due to a pale slip.

Besides the use of a slip we find another procedure adopted in Schipenitz which does not occur in Moldavia or Bessarabia. This is the application of a thin red wash to the lighter surfaces before the ornament is painted on. Such a wash is quite distinguishable from the red or brownish-red paint lines used to enhance black designs; for such lines can be clearly seen over the wash. The affinities of this procedure, perhaps, lie to the north-west. I have observed the use of such a wash in very many instances on the pottery from Bileze Złota, and Koszyłowiec. In the great urn from Koszyłowiec figured by me in *J.H.S.*, xlii, Pl. XIIa, the red wash partially covering the surface forms an integral part of the ornamentation. At Schipenitz this red never serves as an independent decorative paint. Only in a couple of Schipenitz vases (Nos. 50785 and 50784, both of the same form as the Ashmolean vase) is the wash applied in more or less regular oblique stripes, and even here it merely forms a background to the main design in black. I also found a few stray sherds at Vienna in which the wash formed apparently regular lines. This technique can be best studied in some vases from our site in the Museum für Völkerkunde, in Berlin. These several methods of preparing the vase surface are used equally for all forms and styles of painting.

Painting.—The Schipenitz vases may also be classified in accordance with the colours employed. Class (a) contains the monochrome vases, in which the design is executed in black alone. In class (b) the main design is still executed in black, but this is relieved by thin lines of red in bands or hatchings. These two styles may be used on any form of vase and on slipped or unslipped surfaces, though, naturally, class (b) is never used over a dark red natural surface. Both classes recur repeatedly at Cucuteni and Petreny, and in Galicia. On the Dniepr and in Podolia black alone seems to have been employed, while in the west that colour does not occur without red. Class (c) is distinguished by a freer use of red over a thick white paint slip. The style is only represented on a couple of vases of forms 3 and 4 decorated with a band of double spirals between horizontal ribbons. The centres and two radial

arms of the spirals are in black, but two broad red radii are added, and broad red stripes set off the border ribbons.

A similar free use of red is frequent at Bilcze Złota, Wasylkowce, and Koszytowce. At the first two sites the main designs are often actually executed in red, the black merely serving as a framework (e.g. the spirals on the well-known urn from Bilcze figured in *Zbior Wiad.*, xviii, p. (23)).

Forms.—The Schipenitz potter's repertoire of shapes was considerable but not unlimited, and to each form corresponds a restricted number of designs which recur again and again with minor variations. The designs may in most cases be traced to the lying S spiral of Erösd, Cucuteni I, and Horodnica. The accompanying figures will sufficiently illustrate the forms and ornaments, while a glance at the comparisons cited will show how closely the Schipenitz pottery resembles that of other sites within the area.

Form 1.—Fig. 3 and Pl. XIV, 3. Conical dishes; average ratio of rim to base diameters, 3:1:1; diameter of largest specimen, 42.2 cms.; ornament only on

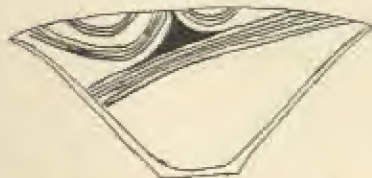


FIG. 3.—FORM 1, DESIGN II. $\frac{1}{2}$.

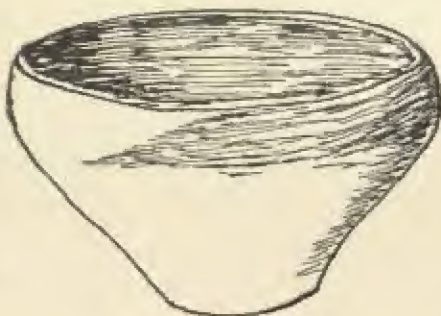


FIG. 4.—FORM 2. $\frac{1}{2}$.

the inner side; red paint not used. Parallels—design i, Popudnia in Podolia, Bilcze Złota (*Zb. W.*, xvi, Pl. IV, 7), Koszytowce (*Album*, viii, 52), Petreny (*P.K.S.R.*, Pl. VI, 10); design ii, Bilcze (*l.c.*, Pl. IV, 2), Petreny (*l.c.*, Pl. VI, 11).

Form 2.—Fig. 4. Deep bowls with slightly inturned rim; largest example 46 cms. wide; at Schipenitz generally unornamented. Parallels—Kiev Government (*Trudy*, Pl. XXV, row 4), Bilcze Złota, Koszytowce (*Album*, ix, 63), Cucuteni II, Petreny (*P.K.S.R.*, Pl. VI, 5), Priesterhügel (*Mitt. präh. Comm.*, p. 374, Fig. 64); for Bulgaria, cf. *Man*, 1923, 2, and for Thessaly, *J.H.S.*, *l.c.*

Form 3.—Figs. 5-9 and Pl. XV, 1. Bulging urns; height always less than greatest diameter; largest, 65 cms. high and 73.3 cms. wide; the lower half is left rough and unornamented and makes a perceptible angle with the upper part; round the base of the neck is always a marked depression; two specimens were ornamented in style of class c. Parallels—Horodnica (with white paint as in our ware D, Hadaczek, *Album*, xv, 126), Popudnia (with "eye" motives like design i), Zieleńce

near Trembowla (*Mat. a.-a.*, Fig. 10A), Bileze (*Zb. W.*, xvi, Pl. I, 2 = design iv at Schipenitz), Wasylkowce (similar designs, but with lugs on the belly, *Zb. W.*, xiv, Pl. II, 3), Koszytowce (modifications of design iv), Petreny (with handles on the belly) (*P.K.S.R.*, Pl. X, 8, reproduces our designs ii and iii), Erösd (*Arch. Ert.*, xxxii, Pl. I, 1, with relief ornament). The fine spirals on the more rounded vases,

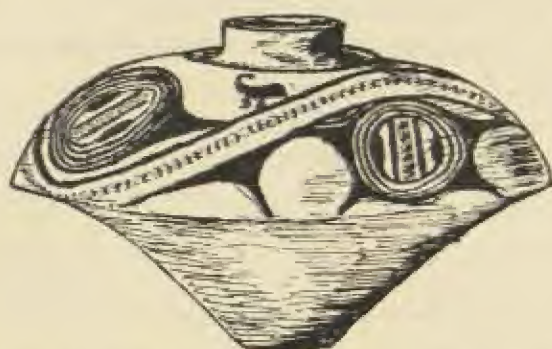


FIG. 5.—FORM 3, DESIGN I, IN BLACK AND RED ON WHITISH SLIP, $\frac{1}{4}$.

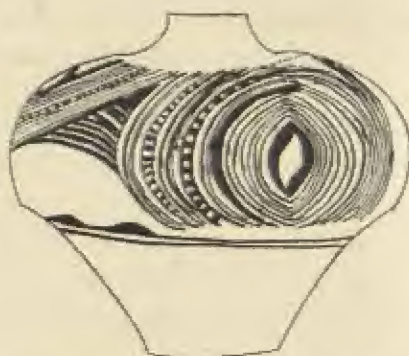


FIG. 6.—FORM 3, DESIGN II, IN BLACK ON RED CLAY, $\frac{1}{4}$.

from Bileze imply that these are the older (*Zb. W.*, xviii, p. (23), Fig. 15). All the above preserve the characteristic depression round the neck.

Form 3'.—Pl. XIV, 1. Unique example; neck ornamented with zigzag ribbons.

Form 4.—Fig. 10. Biconical urns; height always less than greatest width. One specimen attains the height of 64 cms., with a diameter of 65 cms., but large

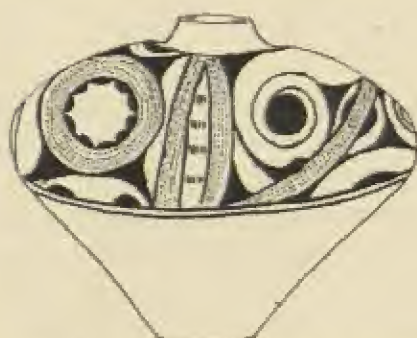


FIG. 7.—FORM 3, DESIGN III, IN BLACK AND RED, $\frac{1}{4}$.



FIG. 8.—FORM 3, DESIGN IV, IN BLACK ON RED CLAY, $\frac{1}{4}$.

sizes are rare in this shape. With the exception of one example painted in style of class c, all the vases of this shape are decorated as in the illustration, but the ribbon round the neck may be replaced by an animal frieze. Parallels—Rzhishchev (*Zapiski, l.c.*, Pl. III, 7), Popudnia, Bileze, Koszytowce, Cucuteni II (*Z.f.E.*, *l.c.*,

Fig. 3B), Petreny (*P.K.S.R.*, Pl. IX, 1). The design recurs at Bilecze (*Zb. W.*, xvi, Pls. II, 4, III, 8, and IV, 1) and more degenerated at Koszytowiec (*J.H.S.*, xlii, Pl. XIIb, *Album*, xv, 130).

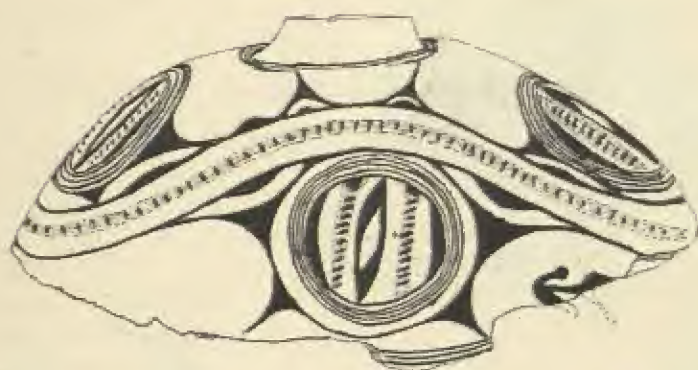


FIG. 9.—FORM 3, DESIGN I IN BLACK AND RED ON PALE SLIP. $\frac{1}{2}$.

Form 4'.—Figs. 11 and 12. Biconical amphoræ with vertical handles below the neck; the height generally exceeds the maximum diameter; largest specimen, 54·4 cms. high, with a diameter of 53·2 cms.; design (i) (Fig. 11) is typical for the larger sizes, the "face motive" for the smaller. Parallels—smaller sizes with



FIG. 10.—FORM 4, DESIGN IN BLACK AND RED. $\frac{1}{2}$.

"face motive"—Popudnia, Bilecze (*Zb. W.*, xvi, Pl. III, 2), Petreny (*P.K.S.R.*, Pl. VI, 6), allied forms from Tripolye B (*Trudy, I.e.*, Pl. XXV, row 2), Petreny (*P.K.S.R.*, Pl. II, 1), Koszytowiec (*Album*, xvii, 146).

Form 4''.—Fig. 13. Biconical amphorse with horizontal handles; height always exceeds diameter; largest example 40 cms. high and 29 cms. wide; the form is rare at Schipenitz and the designs are badly preserved. Parallels—Popudnia,

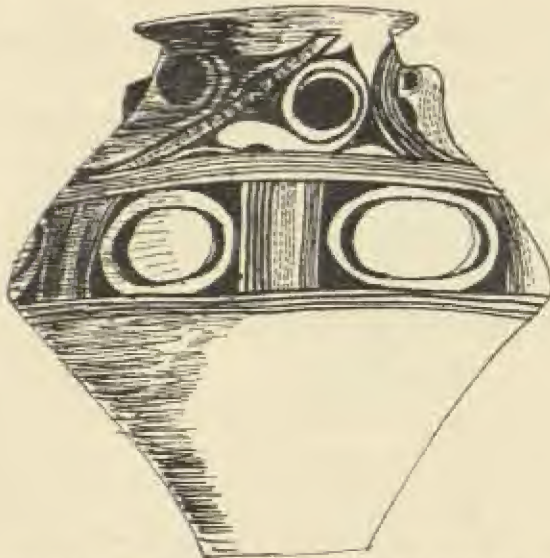


FIG. 11.—FORM 4', DESIGN (i), IN BLACK AND RED ON ORANGE SLIP. $\frac{1}{4}$.

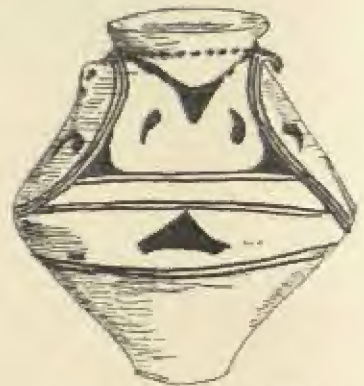


FIG. 12.—FORM 4', "FACE MOTIVE." $\frac{1}{4}$.

Zieleńce, Bilcze, Wasyłkowce, and Cuouteni II; more remote—Koszyłowce (*Album*, xvii, 150), Horodnica (*ibid.*, xviii, 158), and Erösd (*Arch. Ert.*, xxxii, Pl. II, 5).

Form 5.—Fig. 14. Craters with concave necks; one extreme example attains a height of 41 cms., equalling its rim diameter, but the latter is normally less than



FIG. 13.—FORM 4'. $\frac{1}{4}$.

the height; the external ornament always conforms to that illustrated, but shallower specimens show in addition a wolf's-tooth fringe inside the rim. One exceptional crater has a ring foot. Parallels with same design—Bilcze (*Zb. W.*, xviii, p. (9), Fig. 5) and Niezwiska (Hadaczek, *Album*, xi, 87). Compare also Fig. 16 from Bilcze.

The lower design of the latter recurs on a fragment from Cucuteni II, and is plainly a degeneration of the volutes on vases of form 5' from the Kiev Government and Petreny (Fig. 17). The form is also found at Zieleńcze near Trembowla.

*Form 5'.—*Pl. XV, 5. Convex shouldered craters; the rim diameter is generally less than that of the belly; the design spreads over the belly and neck. The four-

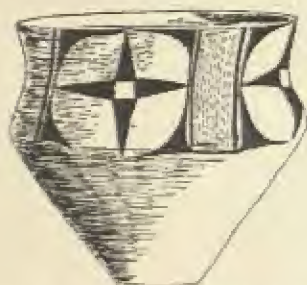


FIG. 14.—FORM 5, DESIGN IN BLACK AND RED ON CREAM SLIP. $\frac{1}{4}$.

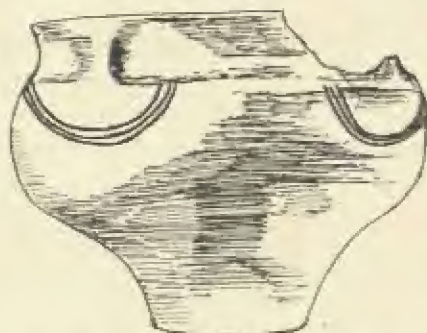


FIG. 15.—FORM 5', DESIGN IN BLACK ON RED CLAY. $\frac{1}{4}$.

footed crater (Pl. XV, 6) and that with ridge handles on the shoulder (Fig. 15) are exceptional. Parallels—Popudnia (with cognate ornament), Tripolye B, and Petreny (Fig. 17). The form appears already in Cucuteni I. The four-footed variant is known in coarse ware from Zhukovtsy (*Trudy, l.c.*, Fig. 72), Petreny (*P.K.S.R.*, Pl. I, 7), Cucuteni (*Z. f. E., l.c.*, Fig. 4A), and Koszyłowce (*Album*, vi, 42).



FIG. 16.—CRATER FROM BILCZE ZŁOTA.



FIG. 17.—CRATER, TRIPOLYE-CULTURE B.

Form 6.—Pl. XV, 2. Cups varying in height from 13.5 to 7.8 cms.; the walls are often very thin. The invariable features of the design are the vertical panelling and the two thick, concentric arcs standing on the lower fillet; animals or other embellishments in the panels are rare. Parallels with the same design—Cucuteni II, Zieleńcze, Bilcze, and Petreny; with rather different ornament—Veremye (*Khanenko Antiquités du région de Dniepr*, i, Pl. VI, 33 and 34), Kolodistoe (*Izvestia Arch. Komm.*, xii, p. 90, Fig. 3), Koszyłowce (*J.H.S.*, xlii, Fig. 6), all showing vertical

panelling, and Oltszem in Transylvania (*Arch. Ert., l.c.*, Pl. III, 14). The form seems to go back to a rounder type found in Cucuteni I (*Führer durch die staatlichen Museen in Berlin, Vorgeschichtliche Abteilung*, 1922, Pl. V, row 2, No. 1) and Horodnica (Hadaczek, *Album*, xiv, 115). Similar rounded shapes with good spirals in red occur at Wasyłkowce. The cups with handles illustrated by Hadaczek, from Koszyłowce (*Album*, xiii, 118 ff.) are all miniatures 6·5 cms. or less high.

Form 7.—Pls. XIV, 2, and XV, 1. Soup-plate lids. Being ornamented only on the outside, these vessels cannot have been intended for use as dishes; on the other hand, their decoration corresponds to that typical of urns of form 3, and their rims fit exactly in width and profile into the depression round the necks of such urns. Pl. XV, 3 shows such a lid in place on an urn of identical pattern and technique. Parallels—Zieleńcze (*Mat. a.-a., l.c.*, Fig. 9k), Bilcze (*Zb. W.*, Pl. III, 4), Koszyłowce (*Album*, xii, 92); both the latter with designs corresponding to those of form 3, and so also the "Swedish helmets" of Petreny (*P.K.S.R.*, Pl. VI, 9). The handles on the latter must be brought into connection with the similar handles on the bodies of these

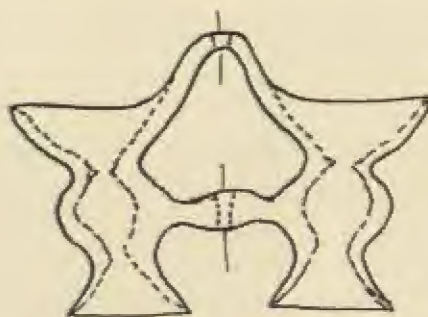


FIG. 18.—FORM 8.
SECTION. $\frac{1}{2}$

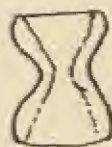


FIG. 19.—FORM 8'.
SECTION. $\frac{1}{2}$

urns there; so, pierced lugs occurring on some specimens from Bilcze correspond to lugs on some type 3 urns from that site (*Zb. W.*, xvi, Pl. II, 6). Such attachments served to receive strings fastening the lid on to the urn.

Form 8.—Figs. 18 and 20. Binocular stands. These curious vessels are generally of rather rough workmanship and ornamented only on the outside, the interior being left smooth; but in at least one example from Schipenitz, as in two cases at Koszyłowce (*Album*, xix, 165), the pipes are closed at the upper end, so that we have a pair of saucers. In these cases the saucers are carefully smoothed and painted inside. This observation (showing that the tubes were not an essential feature of the contrivance) disposes of the suggestion of Kossinna that such objects were drums (*cf. Mannus*, i, p. 238). Parallels—Binocular stands occur in grooved ware in stations of Tripolye A on the Dniepr, and at Pieniążkowa in Podolia, and in painted ware at Horodnica, Koszyłowce, Bilcze, Kapusciuce, and elsewhere in Galicia, at Popudnia, Petreny, and Cucuteni II. Prof. Ailio further reports the

discovery of a fragment (wheel-made!) from Kolander Chan in Transcaaspia (*op. cit.*, p. 99, kindly supplemented by a letter to the author).

Type 8'.—The single ring stands represented in Fig. 19 are complete in themselves but correspond exactly to the pipe of a binocular stand. Similar ring supports in grooved ware are common from stations of culture A on the Dniepr (*cf. J.H.S., l.c.*, p. 273 and Fig. 15). Pedestalled bowls ("fruit-stands") are common in Cucuteni I

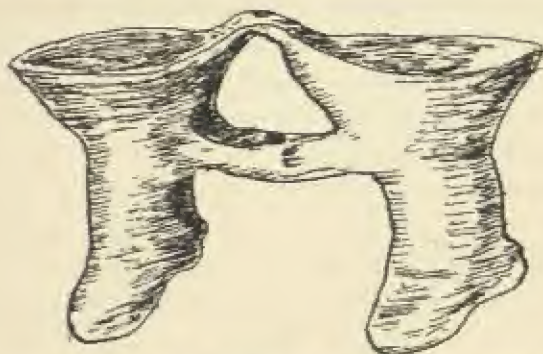


FIG. 20.—UNIQUE BINOCULAR STAND IN THE FORM OF HUMAN LEGS. $\frac{1}{2}$.

(*Z. f. E., l.c.*, Fig. 2) and in Transylvania, where open ring stands are also found (*Arch. Ert.*, xxxii, Pl. IV).

Form 9.—Fig. 21. Basins; maximum length, 44 cms.; the inside plan is a flattened oval, but the broad rim is contracted towards the middle of the long sides to a figure-eight outline; ornamented only on the inside; four specimens at Vienna.

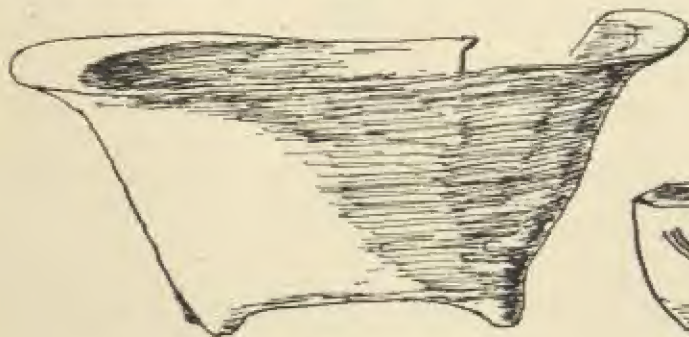


FIG. 21.—FORM 9. $\frac{1}{2}$.



FIG. 22.—FORM 9'. $\frac{1}{2}$.

Form 9'.—Fig. 22. Only in small sizes; there are two handles on one long side and one in the middle of the other.

WARE B.

Most of the above shapes are also met with in plain ware which, from a technical point of view, is identical with the preceding category. We have in addition the following new forms which are not met in painted ware.

Form B1.—Pl. XV, 8. Lamps; on the sharply inturned rim a bull's head is modelled, and on the other side are two small knobs. Chvojka describes a possibly similar object, which he ascribes to the latest phase of his culture A (*Zapiski Imp. Odesk. Obsheh. Istorii i Drevnos.* xxiii, p. 199).

Form B2.—Pl. XV, 9. String-hole lids. Parallels—Bilcze, Wasylkowce (*Zb. W.*, xiv, Pl. II, 7), Koszyłowce (*Album*, xii, 97, painted). The form is common in Troy I and II, and in Crete is Early Minoan (*Palace of Minos*, p. 60).

Form B3.—Three small biconical vases about 5 cms. high have been contracted at the belly, so that in two cases the outline of the junction of the two cones is a figure eight and in one a quatrefoil. Exact parallels to the latter are found at Koszyłowce (*Album*, xiii, 102 and 104).

Form B4.—Miniature vases are common to all stations with the painted pottery. Exceptional is the "egg-cup," Fig. 29n, and the ladle of Fig. 29c. The latter is of a type found with the latest crusted ware of Moravia.

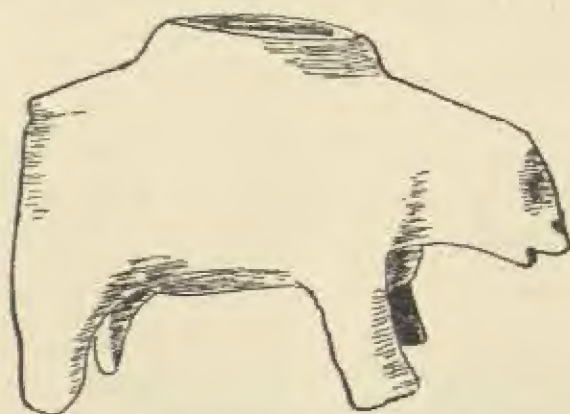


FIG. 23.—THERIOMORPHIC VASE. $\frac{1}{2}$.

Form B5.—Pithos standing about 70 cms. high and equipped with four rows of handles, four in each row, exactly like that illustrated by von Stern from Petreny (*op. cit.*, Pl. XI, 3).

Form B6.—Pl. XVI, 1. Theriomorphic bowls on four legs. Exactly similar four-legged bowls are known from Cucuteni II, Koszyłowce, and a site near Zaleszczyki. Modified forms with animal-head handles on the rim are common in the Kiev Government, and occur at Petreny (*P.K.S.R.*, Pl. VI, 21) and in Thessaly at Dimini (Tsountas, Δ & Σ, Pl. XXIII).

Here may also be mentioned the hollow animal vase of Fig. 23. It is provided with a large rimmed opening in the back, and the mouth is purely ornamental. An exact analogue was found at Tell Ratcheff in Bulgaria (*Rév. Arch.*, 1901, p. 330, Fig. 1). Hadaczek illustrates (*Album*, xx, 173) a more elaborate vase of the same species from Koszyłowce.

Form B7.—Sieves. Only one of these was found. It is made of very hard burnt red clay with walls 0.65 cm. thick. The walls curve outwards from the base very slightly and are 8 cms. high. The bottom, which is flat and perforated with 40 holes about 0.5 cm. wide, has a diameter of 15.75 cms.

Form B8.—A very curious shape is shown in Pl. XV, 10. The interior and exterior are very carefully polished. In some examples the base is enlarged to a bulb-like knob, but is still sufficiently flattened underneath to allow the vessel to stand. In view of the careful finishing of the inner surface, I am inclined to regard these vases as drinking cups. They range in height from 6.75 to 8.5 cms. Von Stern, on Pl. VI, 12, publishes what appears to be an identical shape, 5 cms. high, from Petreny. Popudnia and Buczacz furnish exact parallels. They are all to be connected with such grooved vases as *Trudy*, Pl. XXVII, top row, a miniature example of which comes from Cucuteni I.

Ware C.—With the typical well-burnt reddish ware was found a small number of sherds of a very rude fabric, never painted, but sometimes adorned with rough incisions or impressions. This material is at once distinguishable from even the



FIG. 24.—WARE C, FORM 2. $\frac{1}{2}$. (FROM BILCZE ZŁOTA.)

coarsest sherds of ware B. The clay is very coarse and badly purified, and generally mud colour or ash-grey; only once was it reddish. The surface is unpolished and pitted all over with grit holes till the sherds look porous. They feel remarkably light in the hands. The primitive decorations are shown on Pls. XVI, 3, and XVII, *m* to *o*. So rare was this ware at Schipenitz (there are only four whole vases and less than forty sherds at Vienna) that only three shapes can be made out.

Form 1.—Deep cylindrical beakers (Pl. XV, 7). At the widest point are two small lugs.

Form 2.—Wider cups with a slightly contracted neck and out-turned rim (*cf.* Fig. 24).

Form 3.—Wide bowls (Pl. XVI, 3). No complete specimen survives, but this shape also had lugs on the shoulder.

Now it is clear that none of these shapes has anything to do with the characteristic forms of wares A or B, just as the technique is utterly different. Nevertheless, there is no reason to doubt that the coarse ware belongs to the same stratigraphical

context. An identical fabric has been found at Cucuteni II (*Z. f. E.*, l.c., Fig. 4), (Petreny *P.K.S.R.*, Pl. I, 9, 13, 17), Bileze Złota, on the Dniepr, and at other sites, which have yielded pottery in every way parallel to that of Schipenitz. From Cucuteni II, I saw a sherd in Berlin of which our Pl. XVI, 3, might perfectly well be a photograph, and our forms 1 and 2 can also be paralleled from the same site. At Petreny most of our designs recur. The complete cup from Bileze Złota shown in *Zb. W.*, xv, Pl. V, 3, reproduced here as Fig. 24, is in shape an exact replica of our form 2 and shows an analogous design. Two fragments illustrated by Khanenko (*op. cit.*, Pl. VI, 18 and 27) as from "Kiev and the environs of Tripolye" are clearly related to our forms 3 and 2 respectively, while some of the incised ware from culture B in the same region, shown in Pl. XXV of *Trudy xi* (especially row 2), may very likely belong here.

Sherds of the same fabric were observed by me, always in close connection with the painted wares, in the recent excavations at Koszytowiec. Ailio connects

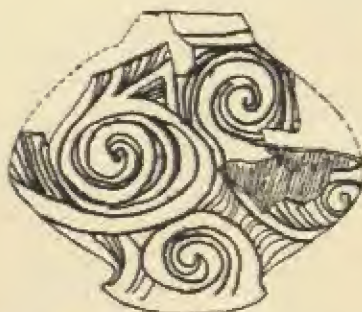


FIG. 25.—VASE WITH WHITE SPIRALS ON REDDISH GROUND. AFTER KAINDL. $\frac{1}{2}$.

this material with Central Russian-Finnish "comb-ornamented" ware (*op. cit.* pp. 36 ff.).

Ware D.—While there is no room for doubt that the material so far described all belongs to the same stratigraphical context, the position of four sherds with polychrome designs in black and white is much more doubtful. All the ware ornamented in this style is stated by Kaindl¹ to have come from a single trench dug by von Kostin at one point in one of his fields. White paint was nowhere else employed at Schipenitz or at the contemporary stations of Moldavia, Bessarabia, or the Kiev Government. It was, however, used in Transylvania, at Horodnica in Galicia, and in stations of the western group. The one form discernible from the Vienna sherds (Pl. XV, 4) is foreign to the usual Schipenitz repertoire, and so is the vase with white spirals illustrated by Kaindl as coming from von Kostin's trench above mentioned (Fig. 25). It generally recalls in shape vases of Cucuteni I.

¹ *Jahrbuch der k. Centralcomm.*, ii, p. 20.

The technique of this pottery is not very different from that of the standard ware. The surface is either orange, as in the bowl of Pl. XV, 4, or a deep, rather brownish red, as in the sherds of Fig. 26. In both cases the paint is applied directly to the surface and the whole burnished. The two fragments last mentioned are of coarser workmanship. The clay is gritty and not burnt evenly throughout. The larger sherd seems to belong to a bowl of the same shape as Pl. XV, 4, but it has been left rough on the inside. I have seen a number of sherds identical in design and technique from Horodnica. Further parallels come from Transylvania. A sherd from Oltszem¹ provides an almost exact analogy to the ornamentation of our sherds. Moreover Kaindl illustrates a fragment of the handle of a ladle from the trench in which the white painted ware was found, which recalls the well-known series of ladles from Priesterhügel. But these analogies are not sufficient to allow us to infer that this material has been imported from across the Carpathians. It is more

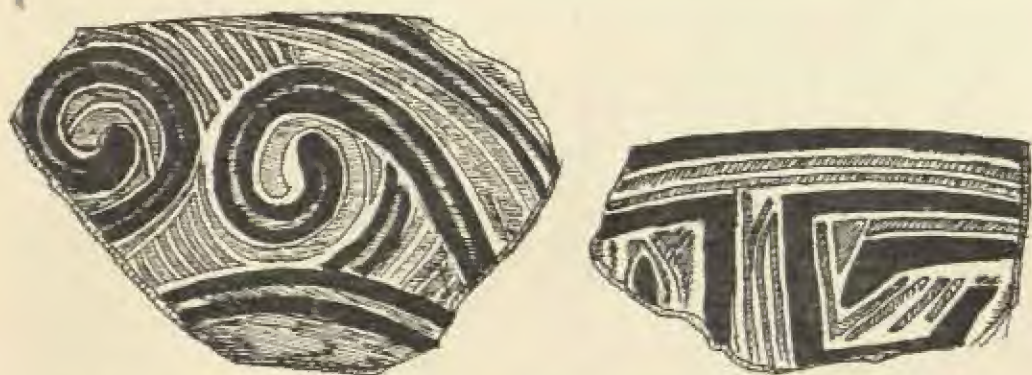


FIG. 26.—SHERDS PAINTED IN BLACK OUTLINED WITH WHITE ON REDDISH GROUND. C. $\frac{1}{2}$.

likely that we have here vestiges of a settlement of a different date from that which yielded the other objects preserved at Vienna. In view of its fine spiral decoration, the presumption is that it stood closest to Cucuteni I.

THE CLAY PLASTIC.

No less characteristic of the culture of the black-earth region than the painted pottery are the figurines of human beings and animals. These too are well represented at Schipenitz. They are manufactured in the same well-baked reddish clay as the typical vases, and one (Pl. XVII, a) is painted in the style of ware A. They fall into two classes: (1) a flat-standing type, and (2) a seated variety. The former, which is by far the most common, was evidently intended for suspension, as the string-holes indicate. With two exceptions—Pl. XVII, d and l—all the examples are

¹ *Arch. Ertészeti*, xxxii, p. 57, Pl. III, 8. The white spirals on a reddish ground of Fig. 25 recall those on a fruit-stand from Erösd, *ib.*, Pl. II, 6.

female. Only one miniature (51029) and a fragment (51032) show a flattening at the bottom which might have served as a base to stand on. The back is flat save for a slight elevation of the buttocks, which may be a survival of ateatopygy. The females are generally naked save for necklaces and belts (Pl. XVII, *b, c*, and *f*); a line of points on the outside of the legs of the small figurine (*j*) must indicate some sort of trousers or high mocassins.¹ The painted stripes covering the whole body of (*a*) are to be regarded as evidence of tattooing rather than clothing. The shield design on the back of (*b*) may be due to the same practice.

The two male figurines (*d*) and (*l*) both wear a belt and carry a pouch slung over the right shoulder. The attitude of the last example is not intentional. The largest standing figurine is 19.85 cms. high (51010), the smallest only 4.4 cms.

Only one example of the seated type is at Vienna (Pl. XVII, *k*), and this is broken and distorted. From the surviving part of the stump of the left arm it seems likely that the arms were not closely folded as in Chvojka's example from Urocishche Dolzhok.

Numerous and close parallels to the standing type may be cited from Cucuteni II, Rzhishchev and other Dniepr stations, unnamed sites in Podolia, Zieleńcze near Trembowla, Koszytowiec, and Cucuteni II. In Galicia also we occasionally meet better modelled legs, and even the feet may be indicated in figurines otherwise identical with the Schipenitz type.² This whole series of figurines is probably to be derived from the more ornately clothed or tattooed, steatopygous type found in the older strata at Cucuteni.³ These examples show that the arms were envisaged not as extended, but as folded in front. To our series must also be referred the bone idols of Kodja Derman and Tell Metehkur, in the East Balkan area.⁴ The slate idol from Troy figured by Schliemann (*Ilios*, No. 995) may indicate a still further southward extension of the series.

To the north, again, we have another large province of erect figurines modelled in clay, bone, amber, or flint associated with the "Arctic neolithic" cultures of northern Poland and Russia and the Baltic lands, which may stand in a derivative relation to the figurines under discussion.⁵ On the other hand, in the Danube area we find a series of erect types, often admirably modelled, extending from Bosnia to Saxony and Silesia in association with the *Bandkeramik*.⁶ Though this Danubian group is undoubtedly akin to the more easterly one, it can scarcely be regarded as

¹ Cf. Hadaczek, *Album*, xxvi, 240 (from Podolia), and text.

² e.g., Hadaczek, *Album*, xxv, 229 and 230.

³ *Z.f.E.*, *l.c.*, Fig. 12, *a* and *n*. One broken idol of this type is among the material from Horodnica in Lwów. It is also met at Króśń.

⁴ *P.Z.*, 1912, p. 103, Fig. 14x; *B.C.H.*, 1906, p. 415, Fig. 57.

⁵ Tallgren, *S. M. Y. A.* xxv, p. 72; Ailio, *op. cit.*, pp. 107 ff. and Fig. 35.

⁶ Hoernes, *op. cit.*, pp. 287, 293, 303; *P.Z.*, i, p. 491; *Schlesiens Vorzeit*, N.F. vii, Fig. 21; *Mannus*, xi-xii, p. 325, Figs. 30-32.

derived therefrom. Nor am I inclined to see the prototypes of either series in the squatting statuettes of the Mediterranean illustrated by the well-known neolithic idols of Knossos,¹ nor in the predynastic Egyptian types with upraised arms.

The seated type is represented in stations of culture B on the Dniepr, at Koszytowie and at Kodja Derman, in Bulgaria.² At the latter site, as also in some stations of southern Russia, we find small clay thrones on which these statuettes were doubtless to be seated.³ In the well-known *kourotrophos* idol of Sesklo the figure has coalesced with the seat. Figures holding babies in their arms are also found in South Russia and at Vinča, in Serbia.⁴ Male figurines are everywhere rare; still, there are a few examples from Cucuteni II, Bileze and Koszytowie, and an uncertain site in Podolia.⁵ West of the Carpathians I know no example older than the full Bronze Age. The immense preponderance of female figurines seems fatal to Schuchhardt's hypothesis that these objects are images of the departed.⁶ On the other hand, their presence at all is a serious objection against the usual theory that the statuettes were fertility charms.

Animal models (Pl. XVI, 2) were found at Schipenitz, as at Cucuteni II, Petreny, Koszytowie, and Kodja Derman. The majority of these represent cattle. The pair of horns (Fig. 29D) is additional evidence of the importance attaching to cattle in this region. It has been modelled separately, but is concave underneath. It may be compared to the bone protome of an ox from Bileze, figured by Hadaczek on Pl. V, 23, of his *Album*. An unexpected exception was provided by the lion (Pl. XVI, 1). He is the most life-like piece of modelling that we have from Schipenitz. Dr. Bayer has suggested to me that the holes indicating the mane were originally filled with straw or bristles. Similar holes are found on a small model, perhaps of a cat, from Priesterhügel, and a dog from Koszytowie.⁷ The likeness is so good that we can scarcely doubt that the artist had seen the animal portrayed. But this is the first indication that the lion ranged so far north in the alluvium. Of course, his presence in the Balkans is well attested by the classical authors.

Reference has already been made to the animal figures used to fill in spaces in the main designs on urns of forms 3 and 4. I reproduce here some of these, and leave it to the reader to interpret them, with the remark that the lion is no longer to be ruled out. Particularly interesting is the griffin of No. 50987. It is, indeed, just possible that the wing-like projection on the back is due to an accident or a later stain, but careful examination with a lens inclines me to believe that it formed

¹ *Palace of Minos*, Fig. 13 and text thereto.

² Trudy, l.c., Pl. XXII, 7; *Album*, xxix, 264 ff.; *Izvestia, Bulg. Arch. Druzh.*, vi, p. 138, Fig. 143.

³ Ailio, *op. cit.*, Fig. 34.

⁴ *P.Z.*, ii, pp. 34 and 101; found in the middle stratum.

⁵ *Mannus*, i, p. 240 and Fig. 17D.

⁶ *Alteuropa*, pp. 131, 170, *et passim*.

⁷ *Mitt. der präh. Comm.*, l.c., p. 382, Fig. 29; *Album*, Pl. XXXIII, 305.

part of the original figure. The theriomorphic patterns of Schipenitz are purely decorative and form no part of the main design ; in fact, our animals seem intruders into the main framework of the older geometric patterns. And yet they must have a history of their own, for their apparent ambiguity is due, not to the ineptitude of the artist, but rather to conscious stylization.

Animal motives, used in a precisely similar manner, subordinated to the main design, are found at Rzhishchev,¹ on a vase of form 4 from Podolia,² at Petreny,

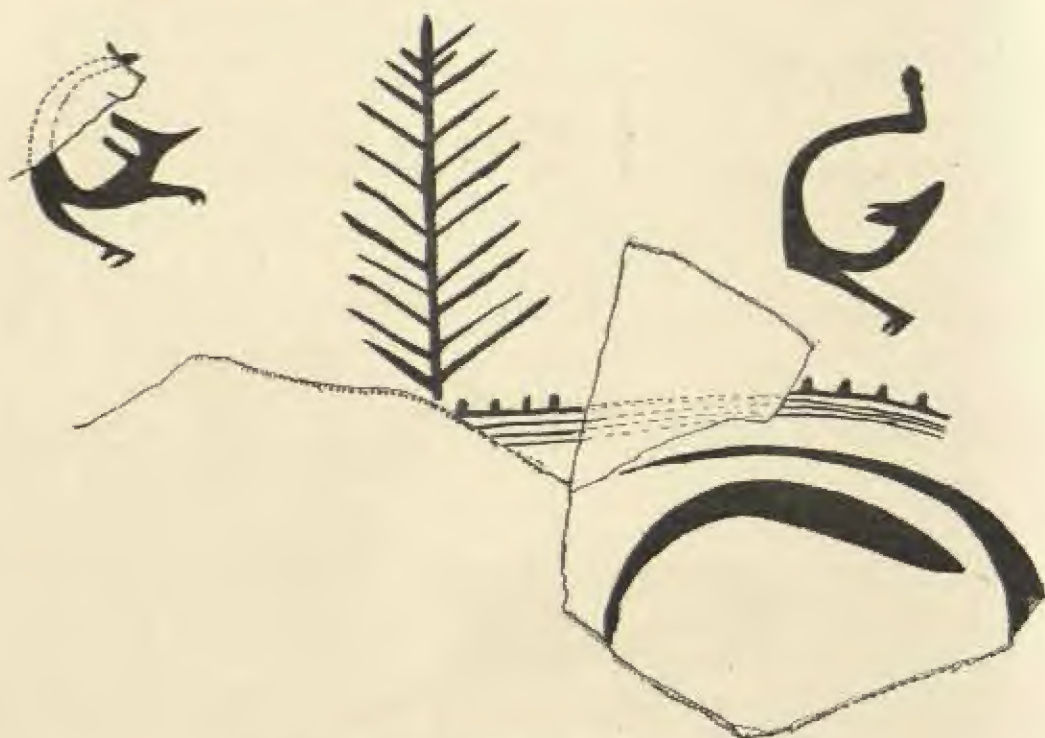


FIG. 27.—DESIGN FROM NECK OF AN URN OF FORM 4. $\frac{1}{2}$.

Bilcze Zota and Koszyłowce.³ But the animals depicted are different at each site.

In the sphere of the *Bandkeramik* to the west, we have stray examples of theriomorphic ornament—in fragments with plastic animals from Hungary.⁴ To the east we have, of course, the great province of theriomorphic ornament represented at Susa, and, though in a different medium, the famous silver vase of Maikop. The rich animal plastic of the so-called "Arctic" culture, which came very near our area,

¹ Zapiski, l.c., Pl. III, 3 and 5.

² Minns, *op. cit.*, Fig. 34, p. 140.

³ *Album*, xxi, 188-192 ; xix, 162.

⁴ *Arch. Ert.*, xxxii, pp. 366 f.

must also be recalled. Whether we regard the animal style of the black-earth region as native or imported, the existence of that style in a region where the Scythian animal style subsequently flourished is a fact to be taken into account in any discussion of the latter.¹

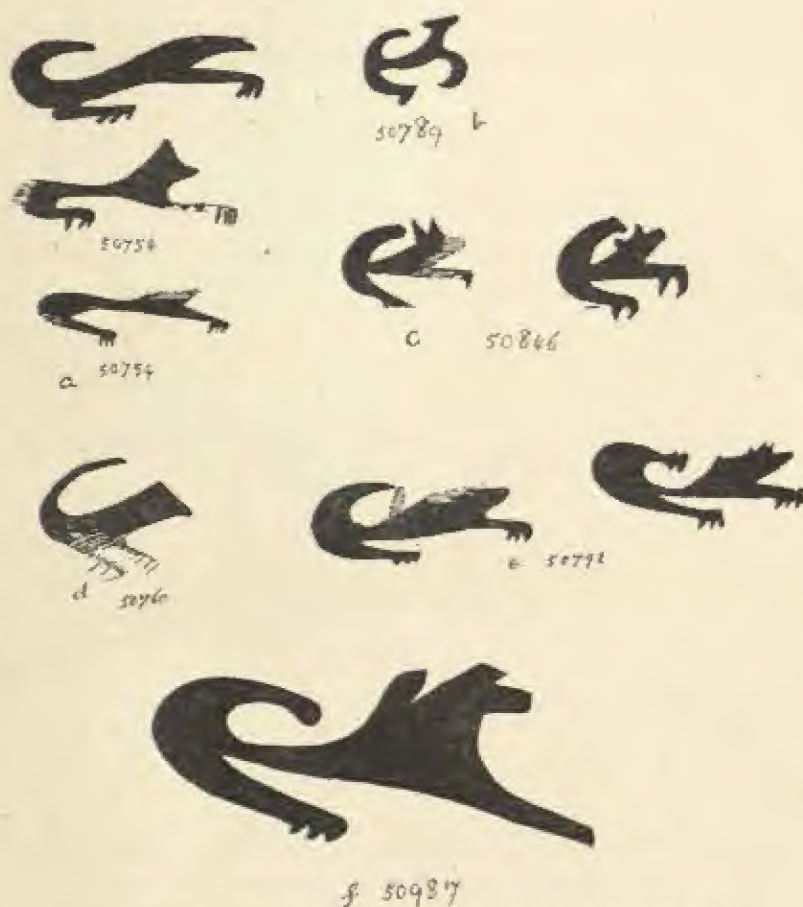


FIG. 28.—ANIMAL FIGURES FROM URNS OF FORMS 3 AND 4. $\frac{1}{2}$.

Miscellaneous Objects of Clay.

Weights or Net Sinkers.—These were very common. Though only of rough workmanship, they may be divided into several groups:—

A. Vertically pierced.

- (a) Flat, 28 specimens: the largest measured 11 cms. in diameter and was 4.3 cms. thick.
- (b) Roughly hemispherical: 8 specimens, the largest being 10 cms. in diameter.
- (c) Conoid ornamented with deep slashes round the edge.

¹ Cf. Prof. Rostovtzeff in "*Iranians and Greeks in South Russia*" (Oxford, 1922).

B. Horizontally pierced.

- (a) Thick triangular lumps with the hole near the top.
- (b) Conoid with the hole at the top.

Whorls.—These were very rare, as in other stations of this culture. At Vienna are two examples of a roughly conoid shape (Fig. 29E) and half a flat disc (Fig. 29F), both acquired in 1911.

IMPLEMENTS AND ARMS.

Stone.—Stone celts are comparatively rare at Schipenitz and most other sites of the same culture, presumably owing to lack of suitable materials. Our specimens are made from a soft marl and are in a bad state of preservation. The thick-butted type predominates. The only approximation to the Danubian "shoe-last" type is a small chisel, No. 37264. The "polisher" shown by Hadaczek on Pl. III, 17,

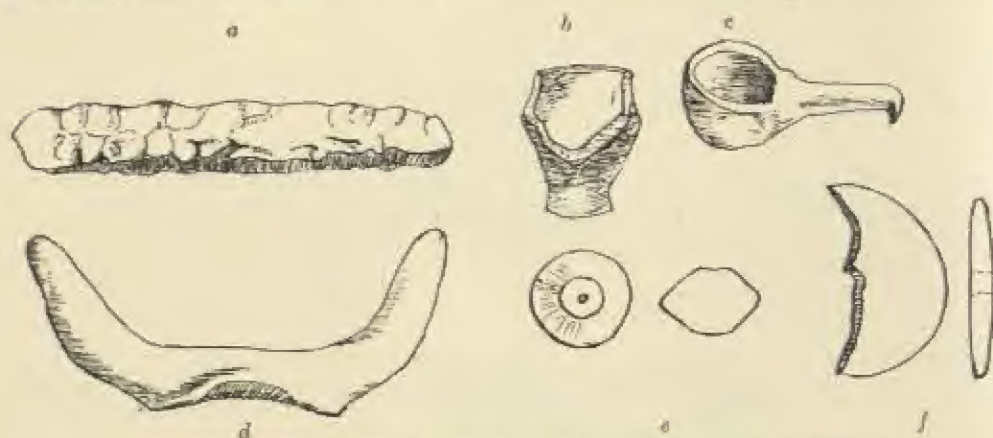


FIG. 29.—FLINT CHISEL, MINIATURE VASES, CLAY HORNS AND WHORLS. $\frac{1}{2}$.

of his *Album* is a parallel type. But a close examination of the Galician material in the Polish museums has convinced me that the shoe-last celt was only very rarely associated with the painted pottery. The concave section of No. 51100 is to be noted. The bored axe (Fig. 30a) had been broken at the haft in antiquity, and a commencement has been made on a new hole nearer the blade. This axe, like one from Cucuteni II,¹ would seem to belong to a group associated with Danubian II pottery in Moravia and Silesia, and at Grossgartach and elsewhere in South-West Germany.

Flints.—The poverty of stone is counterbalanced by an exceptional wealth in flint artefacts. These are of a deep grey colour, and some of the blades attain a great length. Some show fine retouching. Similar flint forms in the same material are very common in Galicia, and recur at Petreny and Cucuteni. The material is plentiful in the whole region. Parallels to our arrow-heads may be cited from

¹ *Z f.E.,* *Le.,* Fig. 8, p. 501.

Cucuteni, Wasyłkowce and Priesterhügel.¹ Several nuclei, in some cases rounded by hammering, are also at Vienna (Pl. XVIII).

Bone and Horn.—Pl. XVI, 4. Bone and horn was also used in immense quantities at all stations of this culture. Generally the implements are of a simple type.



FIG. 30.—STONE IMPLEMENTS.

Elaborate carving such as is exemplified by the pins and pendants of Denev in Bulgaria,² is generally lacking. On the other hand, Bilcze Złota has yielded some more advanced work, including a dagger imitating a metal prototype.³

¹ *Ibid.*, Fig. 10; *Mitt. der präh. Comm., i.c.*, p. 367, Fig. 3.

² *Izv. Bulg. Arch. Druzsh.*, iv, Figs. 202 and 204.

³ Hadaczek, *Album*, Pl. VI, 27a.

Metal.—Two small fragments of bronze (?) are reported to have been found at Schipenitz. I have not seen them, and they may conceivably, like the Slavic sherds and a blue glaze bead, have fallen in from a different stratum. No metal at all occurred at Petreny or at the parallel stations of culture B on the Dniepr. In sites of culture A there flat celts and a pick-axe of pure copper were found. Koszytowiec yielded two quadrangular awls, part of a wire spiral, and some beads of bronze (1), together with a silver spiral; and Bileze Złota a flat dagger (12 cms. long), a razor, and an awl.¹ The uppermost strata at Cucuteni were certainly disturbed, but Prof. Schmidt assigns to the second settlement a flat celt, a quadrangular awl, and a single-bladed axe with tubular shaft of copper, an arm-band of poor bronze, and an iron borer.²

Animals.—Dr. Antonius has been kind enough to examine the few animal bones preserved at Vienna. These indicate the presence of the following domesticated animals: cattle, swine, and dog. Some small fragments prove the presence of goats, sheep and horses, but do not permit of a closer determination. As objects of the chase must be regarded the *Bos primigenius*, *Cervus elephas*, and wild boar. Some bones of *Spalax typhlos* also occurred. These results correspond to the fauna reported from Petreny and the Dniepr sites.³

Chronology.—Our somewhat lengthy analysis of its pottery shows that Schipenitz is representative of a group of sites—Cucuteni II, Petreny, Tripolye B, Popudnia, Bileze, etc.—so closely allied by community of ceramic forms and ornaments that they must be regarded as contemporary. But the stratification at Cucuteni reveals to us an older culture whose rounded pots and spiral ornamentation do actually in a large measure explain the forms and designs of the Schipenitz pottery. To the earlier group must further be assigned the bulk of the finds from Horodnica on the Dniestr, since this site has yielded vases which, despite differences of technique, exhibit the same rounded forms and true spiral ornament as Cucuteni I, and at least one figurine of the latter style. Again, the grooved ware of the Tripolye A-Pieniżkova style is known from Horodnica and Cucuteni I. On the other hand, sherds painted in reddish brown on a whitish clay ground, closely resembling the ware of Cucuteni I, occur sporadically in sites of Tripolye A, while good spirals are a feature of the grooved ornament. Hence, despite the metal finds, this culture too must be regarded as older than Tripolye B, and consequently than Schipenitz. Finally, it is obvious from a comparison of forms and designs that the best Transylvanian material from Ecösd stands in the most intimate relation to that from Cucuteni I and Horodnica, and is therefore to be assigned to the older group.

¹ Hadaczek, *Album*, iv, 32-34.

² *Z.f.E.*, 43, pp. 594 f. and Figs. 14 and 15.

³ Horse bones are reported from Tripolye, Khalepye, and Uroishche Dolzhuk, and have been recently identified at Koszytowiec and Buczacz.

The rounder vases still showing good spirals and red paint of Biloze and Wasylkowce may represent an intermediate phase between the two groups, while Koszytowce and a small group of vases from Cucuteni may well be rather later than Schipenitz.

To convert this relative scheme into an absolute chronology we must seek connections in the south. Dimini gives us a rough lower limit for the older culture, since its characteristic pottery and *mégaron* house can be traced to the lowest levels of Erösd. Hence the Cucuteni I group may be dated approximately to E.M. II. The pickaxe of Tripolye A is not inconsistent with this dating, since it is merely a variant on the simplest type of axe-adze common in the copper age of Hungary and traceable in Crete back to E.M. II. A lower limit for the later group is not so easy to fix, but it may be noted that the rare metal objects—flat celts, flat daggers, awls—certainly associated with the Schipenitz culture belong to "copper age" types in Central Europe and are typologically older than the true bronze age (Montelius I 2). The finds from Early Minoan and Cycladic tombs, Troy, and Remedello show that silver is not a sign of lateness.¹ Even the Cucuteni axe belongs to a family well known in the copper age of Hungary, and above all of South Russia,² and Prof. Schmidt has shown that its technique may be parallel in objects from Treasure K at Troy.³ On these grounds it is, at least, reasonable to assume that our culture did not outlast the second Middle Minoan period.

Conclusions.—The people who made our painted vases were evidently pastoralists, as the animal bones and, above all, the numerous models of cattle show; on the other hand, they cannot have been mere nomads, and the abundant remains of wheat, as well as the location of the settlements exclusively on the fertile loess, imply the practice of agriculture. How they were related to the makers of the Central European *Bandkeramik* cannot yet be determined.⁴

The end of their civilization is generally ascribed to incursions of nomad tribes from the east or north. In the Kiev Government interments with red skeletons have occasionally disturbed *ploshchadki*. In Galicia and Bukowina the stone-cist graves occupy the same area as the painted pottery.⁵ These tombs contain amber, thick butted flint celts of rectangular section, and globular amphoræ (*Kugelamphoren*) with exactly the same design of triangles composed of crescent-shaped impressions as those found very frequently in similarly furnished graves in the Saal-Elbe region and also in Pomerania.⁶ Though rather similar vessels are found in the copper age

¹ Cf. Gowland in *Archeologia*, 1920.

² Tallgren, "Die Kupfer u. Bronzezeit," *S M V A*, xxv, pp. 68 ff.

³ *P.Z.*, iv, pp. 22-27.

⁴ In addition to the differences already noted, pp. 281, 284, I ought to stress the fact that the Tripolye grooved ware is in technique utterly unlike any Central European or Balkan pottery.

⁵ Cf. the lists given by Kossinna, *Mannus*, ii, and Hadaczek, *Archivum Nauk.*, v, p. 488.

⁶ e.g., cf. *P.Z.*, v, Pl. XIV, 1 (Saxony), and *Lemke-Festschrift* (Stettin, 1898), p. 4, No. 8, with Hadaczek, *Album*, vii, 49 and 40 (sherd found at Koszytowce).

kurgans of the Kuban valley¹ and again in the Patyanovo graves of the Oka-Volga area,² the careful study of their distribution made by Kossinna and Kozłowski³ favours a north-south rather than an east-west movement. That this movement was an invasion from East or Central Germany does not, however, follow; the tombs and amphoræ may rather merely mark a very old amber trade route. That is the natural conclusion from the fact that, while such tombs in Galicia contain Baltic amber, in Saxony and the Baltic lands they contain also Galician banded flint.⁴

In conclusion, I would like to express my thanks to the directors of the Prehistoric Section of the Naturhistorisches Museum in Vienna for the opportunity afforded me of publishing these valuable documents from their collection and for the assistance rendered me in their preparation, to Hofrat Szombathy for information on several points, and to the staff of the museum for their generous co-operation. I am also indebted to the director of the Towarzystwo Naukowe, Warsaw, Prof. Demietrikiwicz of Krakow, and Prof. Kozłowski of Lwów, for facilities to study the Majewski Collection, Warsaw, the collection of the Akademija Umiejętności, Krakow, and that of Dzieduszycki Museum, Lwów, respectively at a time when these buildings were closed to the public.

Fuller reports on the pottery and architecture of Erőd will be found in Dr. Ferencz Laszlo's articles in the *Dolgozatok az Erdélyi Nemzeti Múzeum (Kolozsvár)* 1911 and 1914), copies of which I have just received by the courtesy of their author.

¹ *Otechet za* 1898, Pl. VI, 65, and V, 61.

² *Cf. SMYA*, xxv, pp. 83 f.

³ *Groby Megalit. na Wschód od Odry* (1921), p. 39, etc.; *cf. Åberg, Das Nordische Kulturgebiet*, pp. 169 ff. and 204 f.

⁴ Kossinna, in *Mannus*, ix, p. 144.

N.B.—

P.Z. = *Prähistorische Zeitschrift* (Berlin).

S M Y A = *Suomen Muinaismuistoyhdistyksen Aikakauskirja* (Finska Fornminnesföreningens Tidskrift) (Helsingfors).



FIG. 1.—FORM 3' $\frac{1}{2}$.



FIG. 2.—FORM 7. $\frac{3}{4}$.



FIG. 3.—FORM 1 DESIGN 1. $\frac{1}{4}$.



FIG. 1.— $\frac{1}{2}$.



FIG. 2.— $\frac{1}{2}$.

FIG. 3.— $\frac{1}{2}$.



FIG. 4.— $\frac{1}{2}$.



FIG. 5.— $\frac{1}{2}$.



FIG. 6.— $\frac{1}{2}$.



FIG. 7.— $\frac{1}{2}$.

FIG. 8.— $\frac{1}{2}$.



FIG. 9.— $\frac{1}{2}$.



FIG. 10.— $\frac{1}{2}$.

SCHIPENITZ: A LATE NEOLITHIC STATION WITH PAINTED POTTERY IN BUKOWINA.



FIG. 1.—LION MODEL AND THERIOMORPHIC BOWL. $\frac{1}{2}$.



FIG. 2.—CATTLE FIGURINES. $\frac{1}{2}$.



FIG. 4.—HORNS AND BONE IMPLEMENTS. $\frac{1}{2}$.



FIG. 3.—SHIELD OF WALE C. $\frac{1}{2}$.

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SHERDS OF WARE C AND FIGURINES. 1/4.



FIGURINES—FRONT AND BACK VIEWS. 1/4.





SCHIPENTZ: A LATE NEOLITHIC STATION WITH PAINTED POTTERY IN BUKOWINA.

SURVIVALS OF THE USE OF OCULI IN MODERN BOATS.

BY JAMES HORNELL, F.L.S., F.R.A.I., *late Director of Fisheries, Madras.*

[WITH PLATES XIX-XX.]

PART I.

IN a former paper (*Memoirs of the Asiatic Society of Bengal*, vol. vii, No. 3) I drew attention to the survival of the employment of oculi upon certain of the older types of boats in Eastern Seas, particularly in India and China. Since then I have extended my first-hand acquaintance with the subject considerably, not only in India, but also by visits to many of the ports of the Mediterranean—in Italy, Sicily and Malta more especially—where old customs persist strongly among the fisherfolk.

During the past three years I have utilized every opportunity to obtain as wide information as possible, for this is an enquiry that is urgent; old customs are dying out fast, particularly in the East, to give way to a cosmopolitan dead level of commonplace uniformity. It seemed to be a subject that should yield valuable results from the ethnological standpoint, and in this I have not been disappointed.

I shall deal first with the instances met with in India and the far East. In the former region, apart from the river-systems of the north, there are great racial differences and divergencies of custom between the west and the east coast.

On the West Coast, which has been more directly subject than the East Coast to outside influence—Arabian formerly and latterly European, old customs have been largely revolutionized by this outside contact, facilitated by the wealth of natural harbours on the Bombay coast and by the calm weather season that prevails during the north-east monsoon. Hence, though I suspect there are vestiges of oculi to be traced in the ornamental devices seen on some of the Hindu-owned boats of the Bombay coast, these are so obscure that further investigation is needful before any definite statements can be made.

With regard to the East Coast, more conservative and more isolated, and therefore richer in the relics of ancient customs and relationships, unfortunately there is little on record concerning the habits and practices of the shore people. This arises largely because of the physical difficulties that restrict communications along that coast; the railways seldom approach the sea save to serve some important seaport, coast roads are usually non-existent, while travel by sea is out of the question as no landing can be made on this surf-beaten coast except by catamaran. Fortunately, a connected series of waterways extends roughly parallel with the

coast for several hundred miles along the seaward boundary of the Madras Presidency on the east, while others traverse the deltas of the Kistna and Godaveri; these give access to innumerable villages so remote and cut off from the influence of modern movement that customs remain in the main unchanged from what they were hundreds of years ago. It is in such communities that the use of boat oculi survives in considerable vigour. The custom is a widely spread one. It extends along the whole coast from Palk Bay to Bengal and penetrates inland several hundreds of miles along the course of the Ganges. It is not found in the Gulf of Mannar, a locality where outside influence has been almost as great as on the West Coast, and where few Hindu fishermen are to be found.

From Point Calimere to Bengal, only two forms of sea-fishing craft are to be found, the catamaran and the masūla boat. Both are of very ancient origin; though primitive in appearance, in reality they are highly specialized and thoroughly suitable for operations on a surf-bound coast devoid of good harbours. The catamaran, composed of a varying number of logs according to the duty to be performed, is never painted or otherwise ornamented. Its logs, constantly washed by the waves when on the sea, offer no opportunity for decoration.

It is otherwise with the masūla boat. This craft is built up of planks sewn together with coconut yarn (sinnet). It is short, broad and deep, in order to be extremely buoyant; the smaller ones are used for the shooting of shore-seines, the larger for carrying cargo to and from ships in the roadsteads. They are dangerous craft even with the most skilful management; this probably accounts in the main for the many ceremonies that attend their building and launching and also for the presence of oculi on many of them. These oculi are placed on the bows, crudely represented upon a painted ground, usually red in colour; each consists of two curved horizontal lines enclosing a black spot representing the pupil. Sometimes they are slightly incised, or rather scratched in, in others rudely daubed. No care is taken to make them realistic. In some few instances a second pair of oculi is placed on the quarters, close to the stern, possibly because these boats are double ended, sharp both at stem and stern. One of the outrigger Javanese ships among those sculptured at Boro Budur appears similarly to have oculi, round as in Chinese ships, at each end.¹

In a few masūla boats a curious decoration, suggestive of the rude representation of a deeply curved moustache, is added below the oculus, sometimes in front of it and sometimes slightly behind; the up-curling tip is directed away from the boat's stem (text-fig. 1 and Pl. XIX, figs. 3, 4). None of the fishermen could explain its significance, finding refuge in saying that it is just a decoration occasionally added according to the owner's fancy. Curiously enough, oculi and this

¹ Hornell, J., "Origins and Ethnological Significance of Indian Boat Designs," *Mem. Asiatic Soc. of Bengal* vol. viii, No. 3. Fig. 29. Calcutta, 1920; and cf. *J.R.A.I.L.*, 1920. Fig. 28, p. 103.

"moustache" symbol are as common on the boats of fishermen living in Madras city as on those of isolated country hamlets, a fact accounted for by the social isolation in which these fishermen still live, as they form a section of that large population of untouchables with whom caste Hindus will have no social dealings, who in every way are kept at arm's length, and to whom the portals of education are only now being grudgingly opened. Thrown back upon themselves by this exclusion from communion with the educated and progressive section of the population, these people have no interests outside the limits of their own community and their own calling; as a consequence they are intensely conservative, and to this we owe the survival of many ancient customs.

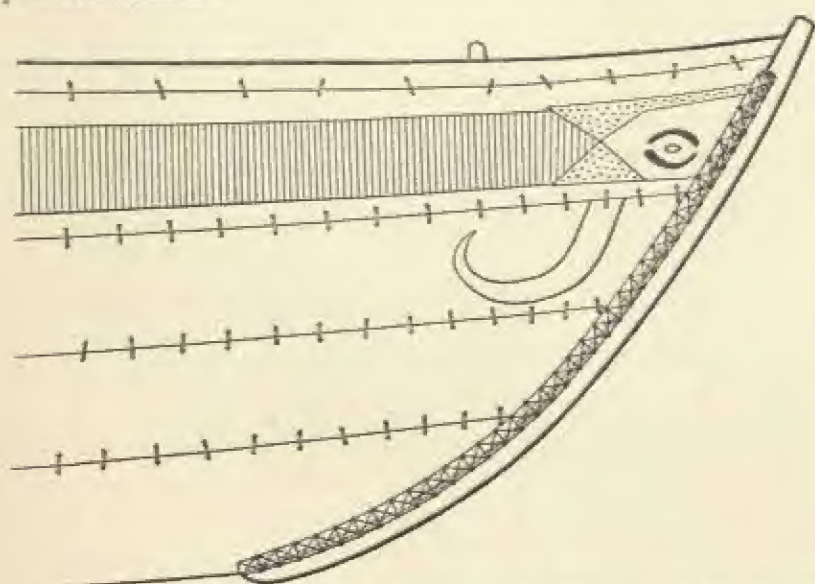


FIG. 1.—FORE END OF A MADRAS MASULA BOAT, SHOWING A PAINTED OCULUS AND ACCOMPANYING "MOUSTACHE" DEVICE.

The waterways of the Kistna and Godaveri deltas afford another series of boats frequently decorated with oculi. This region, because of the poverty of its road and railway communications, has no free access to the culture of the large centres of population, and this is intensified by the conservative habits of the boat people, who pass most of their life in their boats. Superstition is rife among the people of this region: the most obvious of all, devices to avert the evil eye, are conspicuous at every turn—a narrow leather band around the body or the neck of bullocks or, daubed on houses and boats, the rude representation of a man, degenerating sometimes into a form that may easily be mistaken for a crudely formed conventional cross, which symbol I suggest may possibly have actually had this origin.¹

¹ There are variations seen sometimes which have a striking resemblance to a crudely made swastika.

The centre of this area is the Colair Lake, a huge marshy area converted in the rainy season into an immense expanse of shallow water. The villagers, petty cultivators and fishermen, quiet and peaceable in an ordinary way, object to interference by the local authorities. On occasions when the latter have attempted to impose regulations on the use of fishing stakes, primarily in the interests of irrigation, opposition offered has been so violent, that in view of the difficulty of imposing peace by force in such a difficult country, the counterpart of that fen land in England where the Saxons so long defied Norman power, it has been thought the wisest course to wink at this defiance of the law and to leave the people largely to their own devices. Such conditions are ideal for the survival of old customs, and, among others that have persisted, one of the most conspicuous is the use of the boat oculus. In this region three types of boats are found, (a) the *burratādu*, a dugout formed from the butt end of the palmyra palm (*Borassus flabelliformis*), (b) the *nāva*, a long, narrow, planked boat with bow and stern of the Burmese canoe pattern, and (c) the *padavu*, a heavy canal-boat built for cargo carrying. The first named is never painted nor decorated, being too cheap and trivial to warrant such expenditure or trouble. Similarly the *nāva* is never painted, nor is it ornamented with carving, but the majority exhibit some form of an oculus on the solid stem piece below the overhanging edge of the flared bow. Although invariably daubed on roughly in black, and quickly becoming weather-beaten and unrecognizable, a wide range in form is seen, varying from a fairly perfect lens-shaped outline enclosing a round pupil spot, through one in which the lower curve of the lens is omitted, to the final degeneration of a rough circle without lens spot. More interesting, however, is the fact that the "moustache-mark," already seen occasionally in the case of the coastal *masūla* boat, is again shown, rather more emphasized and definite, and more closely identified with the oculus than in the others (see Fig. 7, Plate XIX).

The *padavus* are far more numerous, larger and better built than the *nāvas*; the latter are the villagers' boats, whereas the *padavus* are regular cargo carriers between the towns and villages on the canals. They are built on a type fundamentally different from the *nāva*, having a nearly vertical stem ending in a stem head carved in a helical form (Figs. 2-6). The carvel-built hull is generally painted black, with a large rectangular patch of a different colour, *usually red*, on each bow. Nearly always there is a narrow strip of deeply carved wood along each gunwale extending from the coiled stem head to the hinder edge of the coloured area on each bow. (Figs. 2-4.) The motive of the design is based on the lotus; a series of overlapping scales simulates the petals, while a deeply incised rosette, representing a conventionalized lotus flower, is usually found midway in its length and another at the hinder end. At the fore end a small oval oculus is commonly incised. This oculus is, however, a subsidiary one, the main one, when present, being painted conspicuously in the centre of the coloured patch on each bow. An attempt is

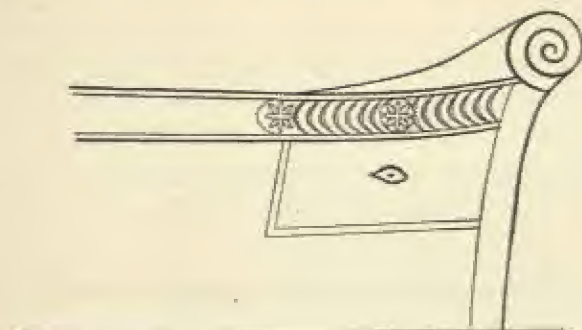


FIG. 2.—FORE END OF A PADAVU ON THE KISTNA-GODAVERI CANAL. THE OCULUS IS OUTLINED, IN WHITE ON A LARGE RECTANGULAR RED PATCH BORDERED WITH A NARROW WHITE BAND.

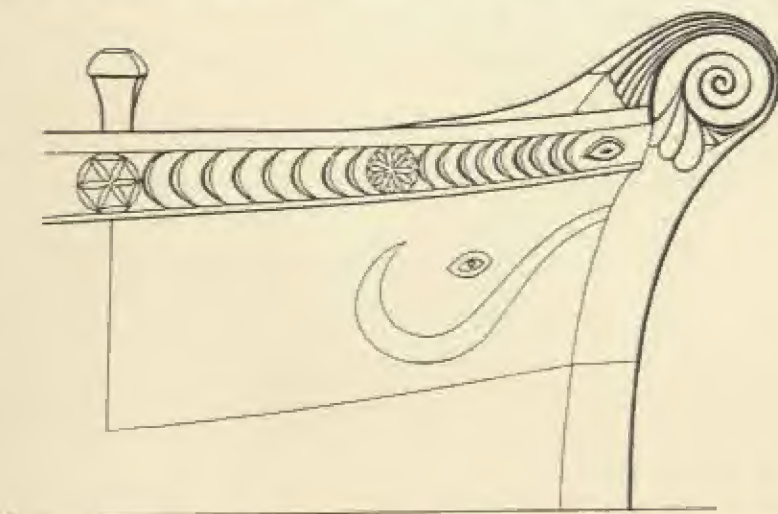
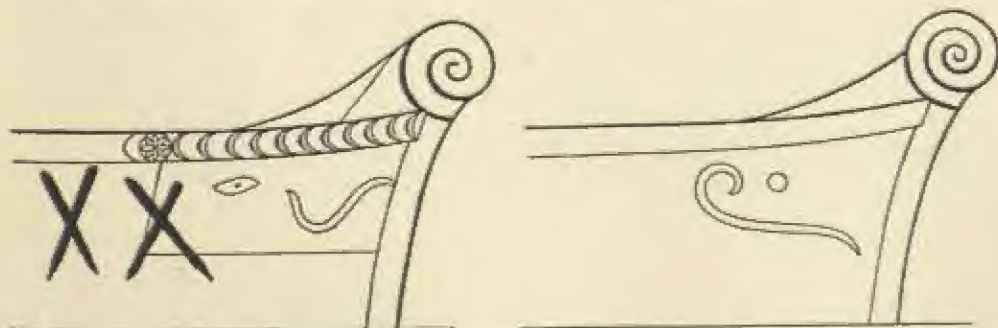


FIG. 3.—BOW AND STEM OF ANOTHER KISTNA-GODAVERI CANAL BOAT. AGAIN THE OCULUS HERE ACCOMPANIED BY A "MOUSTACHE" ORNAMENT, IS PAINTED UPON A LARGE RECTANGULAR RED PATCH. A SECOND OCULUS IS CARVED AT THE FORE END OF AN ORNAMENTAL BAND ALONG THE GUNWALE. EXCEPT FOR THE RED BOW PATCH, THE HULL IS BLACK.



FIGS. 4 AND 5.—FORE ENDS OF TWO OTHER KISTNA-GODAVERI PADAVUS SHOWING VARIATIONS IN THE FORM OF THE "MOUSTACHE" AND ITS POSITION RELATIVE TO THE OCULUS. IN FIG. 4 TWO RUDE CROSSES ARE SHOWN, THE FORWARD TWO OF A SERIES EXTENDING THE WHOLE LENGTH OF THE HULL. THE COLOURS OF THE CROSSES AND THE HULL ARE SHOWN REVERSED; THE FORMER WERE DAUBED IN WHITE UPON THE BLACK SIDE OF THE BOAT. IN FIG. 5 THE OCULUS IS REDUCED TO A SMALL DISC.

usually made to give this eye some verisimilitude; in one case, however, it had degenerated into a vestigial circular ring and in another its place was taken by a black trefoil. The "moustache" motive is present in the majority of instances where an oculus is shown, sometimes distinct and clear, at others so greatly modified and blended with other markings as to be difficult to recognize until analysis be made of the complex. Figs. 3-6 exhibit some of the chief variations. Fig. 3 is the most typical: in Fig. 5 the "moustache" occupies a normal relationship to the reduced and vestigial oculus, whereas in Fig. 4 it is too far forward, and in Fig. 6 has been partly merged into the coloured border frequently placed round the rectangular patch of colour on the bows.

An ornamental device seemingly of the same character is seen further north, carved upon the bows of the abnormally rigged boats of Chilka Lake in Ganjam and Orissa.¹ It consists of a delicately carved stem curving backwards, bearing a

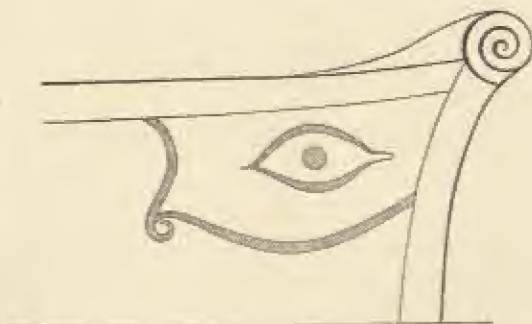


FIG. 8.—ANOTHER KISTNA-GODAVERI PADAVU SHOWING THE "MOUSTACHE" IN COMBINATION WITH THE NARROW MARGINAL BAND THAT OFTEN BOUNDS THE COLOURED BOW PATCH WITHIN WHICH IS THE OCLUS.

drooping "head" that may possibly be intended to represent an unopened lotus flower-bud. It is placed immediately behind and in conjunction with a large and carefully carved conventional representation of the open lotus flower. Fig. 7 shows the relationship and details of these curious ornaments. The open lotus is certainly a modification of an oculus, and there can be as little doubt that the symbol behind is an artistic translation of the "moustache" motive of the boats of the Kistna and Godaveri deltas; its form has been changed and refined to harmonize with the alteration effected in the form of the oculus itself.

This lotus oculus in the example sketched had the centre and periphery coloured white with chunam (limewash); a row of white dots encircled the whole and was continued into a rudely painted base. Above each junction (two) of the broad

¹ These boats carry a high and narrow battened mat-sail upon two bamboo masts stepped abreast of one another close to the fore end.

planks forming the sides of the boat, an irregular series of little dark coloured pyramids was also outlined in white dots; rude though the work was, it suggested at once an attempt to represent waves in the manner employed in Greek decorative symbolism.

Rude oval oculi are also seen occasionally, though rarely, on the bows of the flat-bottomed canal boats which hail from the villages on the margin of Pulicat Lake and ply on the Buckingham Canal. These oculi are generally outlined in white, both with and without a pupil spot.

Besides the above the only boats I know of on the East Coast of India which carry oculi are the clumsy *kalla dhonis* that used to ply between the port of

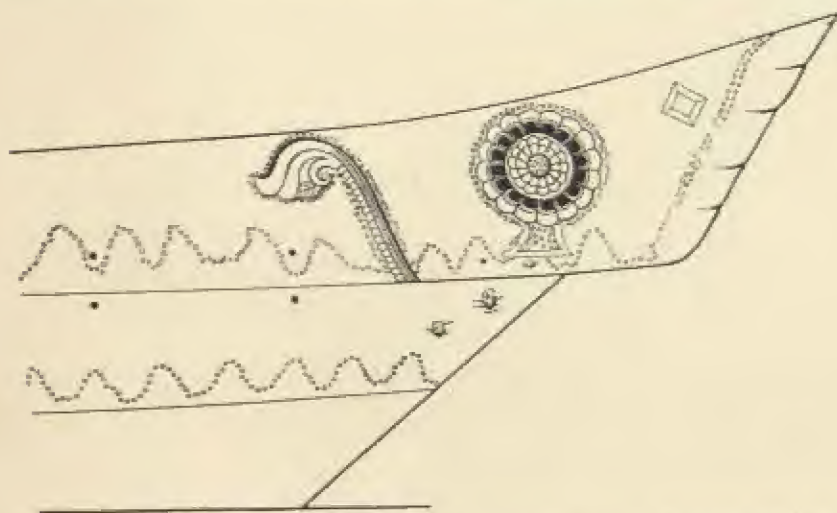


FIG. 7.—FORE END OF A CHILKA LAKE BOAT, SHOWING OCULUS AND "MOUSTACHE" MODIFIED INTO A LOTUS FLOWER AND FLOWER-STALK RESPECTIVELY. FROM A PHOTOGRAPH BY DR. ANNANDALE.

Thopputhurai, near Point Calimere, and the port of Kayts in the north of Ceylon. These boats, which carried three masts, and had a balance-board fitted amidships,¹ invariably had an incised oval oculus (text-fig. 8 and Pl. XIX, fig. 11) on a small unpainted panel on each bow, associated with the name of the patron goddess to whom the boat was dedicated. No trace of a "moustache" was present in any which I have examined. These boats have disappeared during recent years and are now non-existent.

In Ceylon, which may be conveniently mentioned here from its geographical proximity to the south-eastern coast region of India, the only vessels bearing oculi are certain boats owned by Tamilian Hindus living in the Jaffna peninsula. An

¹ For description and figures see my article on "The Origins and Ethnological Significance of Indian Boat Designs," *ut supra*.

emigration to this part of Ceylon from the old Chola country centering in Tanjore is the earliest historical fact recorded of the relationship of this region with India. So old is this connection that the Tamil spoken there is more akin to that of the ancient Tamil classics than is the ordinary Indian Tamil vernacular. Hence it is easy to understand that some archaic Tamil customs still linger in northern Ceylon that have died out in the motherland itself. To a certain extent this is true of the use of oculi in seagoing vessels. In Jaffna it is not the exception for oculi to be affixed to boats as is the case on the mainland. Nearly all the small coasters hailing from Valvettithurai and the neighbouring ports in the Jaffna peninsula display well-marked oculi. These vessels, generally called Jaffna dhonis by Europeans, are known as *padagu* in the vernacular. They are strange-looking craft, rigged

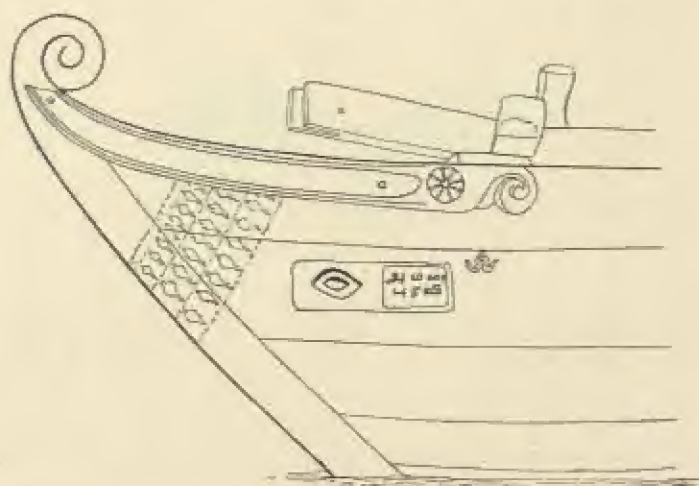


FIG. 8.—INCISED EYE AND DEDICATION TO THE LOCAL GODDESS UPON THE BOW OF A KALLADHONI BELONGING TO THE POINT CALIMERE NEIGHBOURHOOD. THREE SERIES OF YELLOW DEVICES PAINTED AROUND THE BOWS REPRESENT VOTIVE GARLANDS.

as two-masted schooners, with a great development of jibs and foresails. The oculi are large and prominent, being carved out of wood and nailed upon the bows. The pupil and iris are painted black, the eyeball white. In the large oculi on the *padagus*, there is also an outer black margining outline representing the eyelids. Smaller eyes are also nailed upon the bows of the heavy ship's boats carried by these vessels.¹ It may be noted that boats of similar construction and trade belonging to Muhammadan owners in the same locality do not usually bear oculi. Fig. 10, Pl. XIX, shows the form of this type.

¹ Notes upon the religious ritual performed on these Jaffna dhonis, both at launching and at departure on a voyage, are given in my "Origins and Ethnological Significance of Indian Boat Designs" quoted above.

In Northern India a few classes of river craft still retain oculi. Those I have noted are the clinker-built cargo-carriers seen in the neighbourhood of Benares, the cargo *palwars* of Eastern Bengal and the passenger boats called *gayna nouka* of the same region. The Benares boats, used from time immemorial for the transport of stone from the Chunar quarries and of firewood for the funeral pyres, by their close association with the most famous of Hindu holy cities, are naturally those that may be expected to retain archaic features, particularly those of religious symbolism. In these the hull is unpainted save for a large triangular panel of black on either bow. A conspicuous brass oculus in raised relief is nailed to the upper part of the black area; above the eye is a conventionalized eyebrow as shown in Fig. 9. Frequently a garland hangs from the stem head, evidence of puja performed; a set ritual of worship is followed periodically, particularly at *amavasai*, the time of full moon.

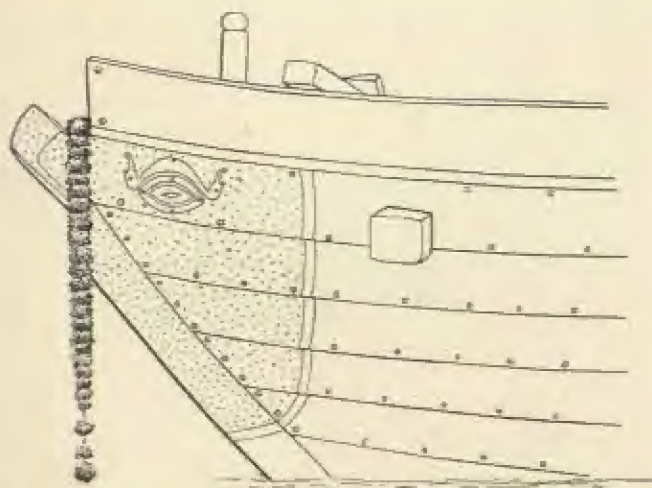


FIG. 9.—BOW OF A GANGES CARGO BOAT, BENARES. AN OCULUS IN BRASS IS NAILED UPON THE UPPER PART OF A BLACK AREA PAINTED ON THE STEM AND BOW. A GARLAND OF FLOWERS HANGS FROM THE STEM HEAD.

The Eastern Bengal boats provided with oculi invariably belong to Hindu owners. The oculus here is fashioned of brass, a similarity with the Benares type that shows the local custom of the Ganges and Padma to be homogeneous.

A further decoration both of the *palwar* and *gayna nouka* is one or two circlets of brass-headed nails around the prow a little behind the oculi. These circlets are intended to represent the garlanding of the prow, as is done periodically with strings of small yellow chrysanthemum flowers on the Benares boats. In the case of the *palwar*, at the beginning of the harvest season—about mid-November—it is customary for the owner and crew, before resuming their seasonal occupation of grain carrying, to perform a special puja, when the prow is painted with vermillion, a flower garland hung round it, and offerings and libations made with the

appropriate ritual. No "moustache" is depicted upon any of these three classes of Gangetic boats.

Evidence of the more widely spread prevalence of the oculus custom in ancient days in India is afforded by the frescoes in the Ajanta caves (Hyderabad), which are dated about 600 A.D. Among these are depicted a three-masted ship and a royal barge, both provided with eyes on the bows.¹

With regard to the countries lying east of India, we find oculi greatly in evidence wherever Chinese influence is predominant. In the harbours of Burma the Chinese sampan has ousted the indigenous canoe as the harbour handy-boat, and invariably these sampans show a round protuberant oculus on each bow.²

The Malays, although they do not use the oculus now, appear to have done so occasionally at no far distant date, for in the Indian Museum at Calcutta is a small model of a Selangor boat, beamy and double-ended, with an outboard platform on each side (a modified double outrigger), which shows a slightly elliptical eye on each

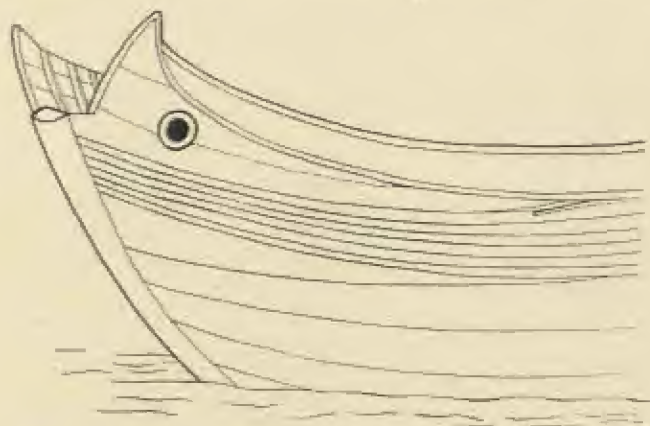


FIG. 10.—FORE END OF A SMALL CHINESE JUNK; A LARGE BOSS OCLUS IS AFFIXED TO THE HEADBOARDS. SHANGHAI.

bow. The black eccentric pupil is at the fore end of the white ellipse of the eyeball, which is painted upon a green panel at the extreme end of the topstrake of the boat on each side.

In China the same round eye seen in the sampans in Burmese ports is universal (Fig. 10), and so fully conventionalized that no variations occur; in Annam also the employment of the oculus is equally general, but the form is excessively lengthened, as shown in Fig. 11.

So far as I know neither the Polynesians nor the Indonesians make use of the oculus. As already noted, this custom appears, however, to have been occasionally followed in Java about the seventh and eighth centuries, for one of the boats

¹ Mankerji, R., *Indian Shipping*, p. 41.

² See postscript.

represented in the Boro Budur sculptures shows what seems to be an oculus at each end.

The Japanese do not appear ever to have followed this custom in spite of it being universal in China, whence the Japanese borrowed so much of their culture. On the other hand, the coast Indians of British Columbia and the adjacent islands, who are (or rather were) noted for the lavish totemistic decoration of almost all their ornaments and gear, extended the same to their boats; large oblong eyes contained within slightly curved lines are common forms of this ornamentation. (Pl. XIX, fig. 14.)

In the British Museum collections are four models of large dugout canoes from Queen Charlotte Island and neighbourhood which all show the presence of oculi. In one of these, where the canoe is painted black except at the fore end, an anthropomorphic eye with eyelid (Pl. XIX, fig. 15) is outlined in black low down upon the unpainted bow region. All the others bear eyes of the typical elongated sub-rectangular totemistic form. In one instance there is a single one towards

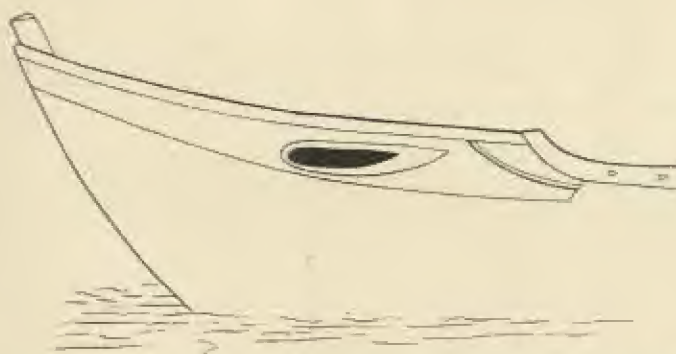


FIG. 11.—ELONGATED OCULUS CHARACTERISTIC OF ANSAMITE BOATS.

each end, with a good deal of red, green and black conventional line patterns. Another has a fairly realistic eye on each bow with an elongated totem eye at the extreme end of the stem region, with a round one behind it; at the stern two totemistic eyes are painted within a red network. The fourth canoe is fantastically decorated with totemistic mask faces as well as with eyes, the faces towards one end, a conventional eye at the other; totem eyes are also painted low down amidships.

Another model, from Vancouver Island, B.C., in the Liverpool Museum, is decorated at each end with sub-rectangular eyes.

From the foregoing notes it is clear that the custom of decorating the bows of boats with oculi is far more general and widely spread in the Indo-Pacific region than is generally realized. The custom is found at the present day in a chain, practically unbroken, along the coast of Asia from the south of India, along the shores of the Indo-Chinese peninsula and of China, and thence across the Pacific

to the coast dwellers in British Columbia. We know also from the frescoes of Ajanta that it extended in the early centuries of the Christian era up the west coast of India.

Three distinct groups may be made out :—

- (a) The Indian, characterised by distinctly anthropomorphic form, and frequently supplemented by a "moustache-like" accessory device ;
- (b) The Mongolian, a conventionalized form without any accessory device, round and boss-shaped among the Chinese, elongated and flat among Malays and Annamites ;
- (c) Mixed totemistic and anthropomorphic forms employed by the shore people of the Pacific coast of Canada.

Regarding the last of these, I consider that the totemistic forms have originated within the tribes using them and have no ethnological importance apart from that attaching to the general totemistic customs of these people. But, as we have seen, the totemistic eye is sometimes replaced or reinforced by a more realistic form distinctly of anthropomorphic type. As these people are undoubtedly largely of Mongoloid origin, and as the Chinese, Annamites, and some Malays employ oculi conventionalized into mere symbols of the human eye, I am inclined to think that the second British Columbian form is more closely akin to the original type than those employed by the modern Chinese and Annamites, and that the latter are conventionalized forms of such a higher type of oculus as that preserved by the British Columbian Indians. The latter eye is much more nearly related to the types common in India, and hence it would seem that the Chinese and Annamite forms are degenerate, and that the time was when a truly anthropomorphic and realistic form of oculus was found continuously along the southern and eastern coasts of Asia from Western India to Northern China, and thence across the Pacific to what is now British Columbia. All these forms probably originated from those of India, and it now remains to trace the origin of the boat oculi of India, as the immediate parent form of those found further east.

The key to this problem is to be found, I believe, in Egypt. Everyone acquainted with the antiquities of that country is familiar with the *Uzat* (or *uchat*) ornament, commonest of all ancient Egyptian amulets against the evil-eye. This represents the eye of the hawk-headed deity Horus, and is also associated with the sun-god Rā. As an oculus it is seen on the funeral boats that ferried the dead to the abode of Osiris (text-fig. 12) ; it is also seen on the bows of some of the toy or model boats placed with other objects of everyday utility in the mummy chamber that the dead might find at hand, when wanted, the same means of travel to which he was accustomed before death (Pl. XIX, fig. 1).

The hawk-eye of Horus (Fig. 13) has several peculiarities : the eyebrow is heavily outlined, while above and below the eyeball a band of *kohl*, still affected

by Egyptian ladies to enhance their charms, is distinctly indicated, continued at the outer corner into a strongly marked backwardly directed band, ending bluntly. A third characteristic is the short vertical bar below the centre of the eye and the



FIG. 12.—PROW OF AN ANCIENT EGYPTIAN FUNERAL BARGE, SHOWING A SLIGHTLY MODIFIED UZAT EYE AS OCULUS (AFTER MASPERO). THIS FORM IS LESS TYPICAL THAN USUAL AND APPROACHES VERY CLOSELY THE "MOUSTACHE" FORM OF CERTAIN INDIAN BOATS.—*Circa 1400 B.C.*

backwardly directed long curved line, arising from the same point as the vertical one. These two lines below the eye indicate certain markings said to be characteristic of the arrangement of the short feathers below a hawk's eye, and are invariably shown when the eye of Horus is depicted.

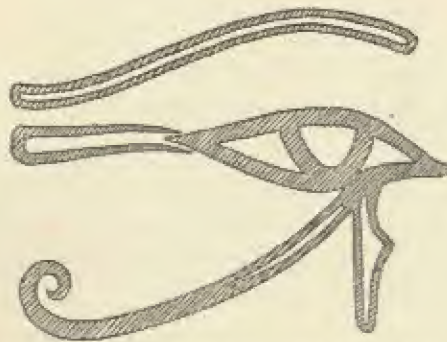


FIG. 13.—A SACRED EYE OF THE SUN-GOD, INCISED UPON EACH BOW OF A BLACK GRANITE BOAT BEARING A SEATED STATUE OF QUEEN MUT-EM-UEA, WIFE OF THOTMES IV (XVIII DYNASTY; c. B.C. 1500). NO. 379 OF THE BRITISH MUSEUM COLLECTION.

Comparison of this symbol of the Egyptian god with such forms of the Indian oculus as are associated with a "moustache" (text-figs. 3-7 and Pl. XIX, figs. 3 to 8) suggest at once the identity of this "moustache" device with the

curved feather line below the hawk eye of Horus. Actual similarity is not to be expected; the lapse of 3,500 or 4,000 years is ample to account for the differences present, even if originally the Indian form was directly derived from the Egyptian. The fact that the Indian device varies greatly in its position and form is indeed strong proof of its high antiquity, for no Indian can explain its significance; merely following a custom in use by his fathers; if one employs a simple pattern in conjunction with another, without understanding of its meaning or origin, unintelligent changes in form and relative position are certain to arise, and this I feel sure is what has happened in the case of this feather pattern of the Eye of Horus, in use now by a people of a different religion ignorant of the meaning of the device they use.

In other papers I have attempted to show that the catamarans of the East Coast of India are modelled upon the ancient Egyptian form of reed raft;¹ with this weightier and more direct corroborative piece of evidence, the inference is strengthened that there are close ethnological affinities between Egypt and the Coromandel coast of India, where customs are still extremely archaic and little affected either by European or Hindu culture. It is my belief that these affinities are due fundamentally to racial relationship, and that a strong strain of the same blood as that which produced the Egyptian type is present in these lowly fisherfolk of the East Coast of India. Both appear, therefore, to be offshoots of that race at present termed the Mediterranean. If so, this strengthens my theory that this race or their direct progenitors peopled a tract extending from the Mediterranean eastwards through Egypt, Southern Arabia, and India, and thence through Indo-China into Indonesia and the Pacific, finally impinging on the western coasts of central and equatorial America.

PART II.—THE MEDITERRANEAN REGION.

The use of oculi in the decoration of boats from religious or superstitious motive has been customary in the Mediterranean region from the earliest days of boat building of which we have any knowledge. So far as we can judge at present, the custom appears to have originated in Egypt, where we find the eye of the Sun-God represented on the bows of the boat of the dead when the primitive ideas of vague spirits haunting trees and embodied in stones gave place to a belief in gods with human attributes. The model boats manned with full crews placed with the mummy to ensure his comfort in travelling in a future life, sometimes bear the same symbol; there can be little doubt that boats and ships employed in commerce and for pleasure and sport² were frequently provided similarly with a representation of this sacred eye. How far this oculus was intended to identify the vessel with the Sun-God

¹ Hornell, J., "Catamarans and Reed Rafts," *Man in India*, vol. i, June, 1921, Ranchi.

² Erman, A., in his *Life in Ancient Egypt*, gives a figure of a hunting boat showing this device.

himself, that the boat consecrated to this deity might see with his eyes and so avoid danger, or was used as an amulet against the evil-eye is a moot point. In favour of the former explanation being true when the Egyptian religion flourished in pristine purity and strength is to be set the facts that the eyes of Horus are depicted on mummy coffins opposite the head in order that the dead may have the power of seeing out, and that the boat itself is even at the present day consecrated to a deity in the case of certain Indian boats (the *kalla dhoni* of Thoppnthurai, and the large dhonis owned by Hindus in the Jaffna peninsula of Ceylon), thereby identifying it with the deity whose eyes on the bow perceive danger and avoid it. The Chinese also universally believe that eyes are necessary to boats and ships to find their way safely over the sea, and this must embody some vague idea of the vessel being sentient and associated with some protective spirit or god. The fisherfolk of Gozo (Malta) have a somewhat similar belief; the older generation look upon their boats as animate; to them the oculi are made for the boat or its spirit to see with, and so signify much more than an evil-eye amulet. The alternative theory that oculi were placed on boats as a protection against the evil-eye is probably correct of the later days of ancient Egypt, when the old religion was becoming corrupt and complex, and when the gods were far more remote and conventionalized to the common people than in earlier days. Such an age is paralleled to-day in India and northern Ceylon; when the boat owner has some culture, and understands the rudiments of his religion, he consecrates his boat to a protecting deity—it may be a village goddess belonging to that pre-Hindu religion of spirits and demons still prevalent among low-caste Indians, or it may be one of the Hindu triad—and identifies it with the god; if he be limited in ideas and saturated with superstition, the signs he puts on his boat are merely amulets placed there in the hope of counter-acting the evil-eye or to propitiate some power of evil.

The Phœnicians also used oculi on their vessels; if we may judge from the scanty evidence of their coins the Phœnician oculus was represented extremely large and conspicuous. In form it appears to have been cruder and less anthropomorphic than the Greek type, but Phœnician remains are so scanty and fragmentary that no reliable details are available, excepting that the eye was without any markings to suggest it having been derived directly from the hawk-eye of Egypt. This, however, does not preclude Egyptian derivation, for any nation adopting the custom from Egypt would be prone to adapt the form of the eye to the ocular convention characteristic of their own particular deities; the custom might be borrowed, but usually not details that would link the symbol with a foreign religion.

In the British Museum catalogue of the Greek coins of Phœnicia, the coins of Aradus (the modern Jezireh Ruad) often show a galley with an unmistakable oculus, while those of Sidon also show this characteristic.

With regard to the ancient Greeks, remains dating from the fifth to sixth centuries B.C. are particularly rich in representations of vessels, both round ships

and war-galleys, on which oculi are conspicuous. Coins, terra-cotta vases, friezes and sarcophagi furnish ample evidence. Figs. 15-17 are typical examples. Fig. 14 is an exceptional form. It is copied from a coin of Leucas (Acarnania). Apparently

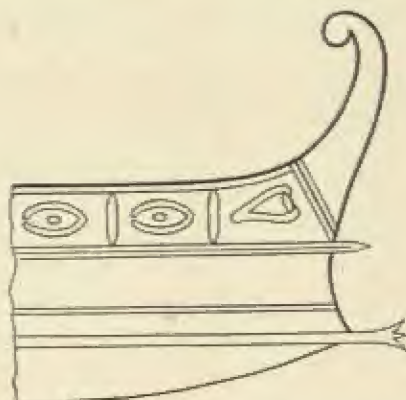


FIG. 14. PROW OF A GREEK GALLEY DEPICTED UPON A COIN OF LEUCAS (ACARNANIA). LARGE OCULI ARE BORNE APPARENTLY IN PANELS ALONG THE WASHSTRAKE. THE FOREMOST ONE IS SHOWN IN PROFILE, THE OTHERS IN FACE VIEW.

the wash-strake at the fore-end was divided into panels, with an eye in each. The forward one shows a side-view of the eye, the other two are conventional forms of the eye viewed from in front. In the case of the round ships of commerce a single oculus was represented on each bow. The custom with respect to war-galleys

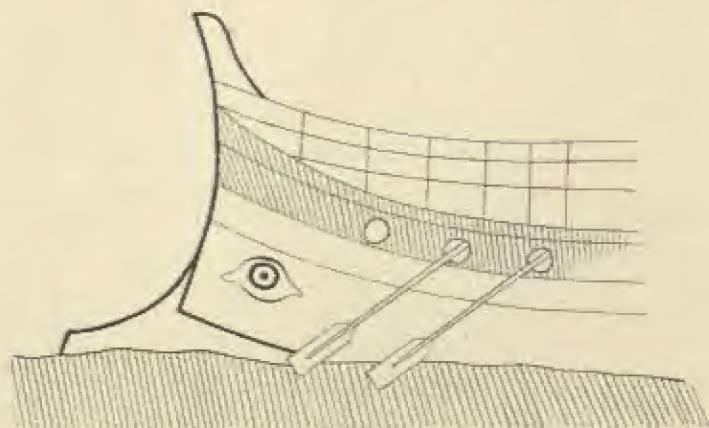


FIG. 15. GREEK GALLEY, c. 500 B.C., SHOWING A PARTICULARLY FINE ANTHROPOMORPHIC OCULUS. FROM A GREEK VASE, AFTER CHATTERTON.

varied; in some a single large oculus was shown on the bow (Fig. 15); in others, particularly where the ram-like beak was fashioned into some animal form, frequently that of the head of a boar, a second eye was painted in the place where this animal's eye might be supposed to be (Fig. 16). In this instance the eye of the

boar is shown characteristically small and pig-like, whereas that on the side of the high bow platform—an early example of forecastle—is of enormous relative size, and manifestly anthropomorphic. The latter was the real *oculus*, that identified with the spirit of the boat; the former should not be classed as an *oculus*, being

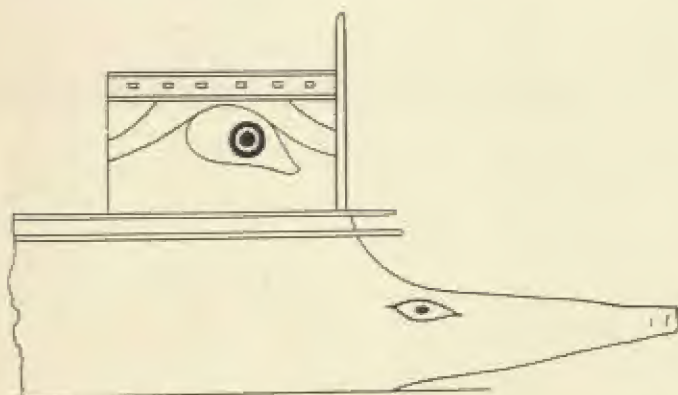


FIG. 16.—PROW OF A GREEK GALLEY FROM AN ATHENIAN VASE IN THE BRITISH MUSEUM (NO. B 508).
5TH CENTURY B.C.

incidental to the fanciful fashioning of the ram-like rostrum into an ornament to add to the artistic design of the vessel.

Of about the same age (*circa* sixth century B.C.) is a wonderfully interesting collection in the British Museum of terra-cotta models of ships and boats of diverse shapes, excavated at Amathus in Cyprus. Several of these show

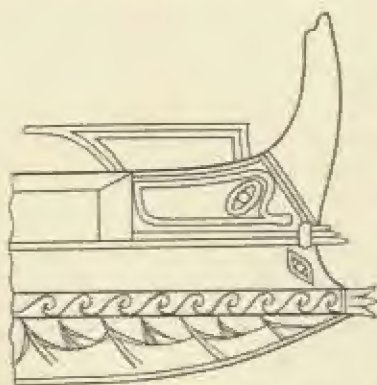


FIG. 17.—PROW OF A GREEK GALLEY, SHOWING TWO OCULI, FROM A COIN OF DEMETRIUS POLIOCHERTES, KING OF MACEDON, B.C. 306-283. BRITISH MUSEUM COLLECTION.

large oculi on the bows (PL XIX, fig. 16). These oculi are characteristically semi-lunar in shape, crossed vertically by a thick bar representing the iris and pupil, with a heavy eyebrow outlined above. These rude models are probably similar to the boats of that fleet of fifty, sent by Kinyras, King of Amathus, as his contribution to

the Greek cause at the siege of Troy—an act for which he incurred the wrath of Agamemnon.¹

Coming to Roman days, we find the same custom followed, but here only a single oculus on each bow was employed; none was ever placed upon the rostrum of war-galleys.

At the present time the use of oculi, particularly in the case of fishing boats, is prevalent in Sicily, Malta and Portugal; in southern Italy strong traces of its recent prevalence exist, and traces, still weaker, are to be found in northern Italy and in France. Probably some of the out-of-the-way ports on the Mediterranean coast of Spain would yield instances, whilst, in view of its prevalence in greatest vigour in the ports of eastern Sicily, once the most important colonies of ancient Greece, we may infer that it also survives in Greece and its islands. It does not appear to persist in Egypt or amongst the native coast population of north Africa, the reason being the same as that which has caused its disappearance from Muslim-owned shipping in India—the Prophet's injunction against the employment of anthropomorphic designs.

SICILY.—As Sicily is the present-day centre of the oculus survival, I shall first describe the forms it assumes in the different ports, all observed personally during a visit paid to this island in 1920.

As is to be expected on the theory of derivation from a Greek source, the boats of Syracuse are more consistently decorated with an oculus than any others. The large boats of the fishing fleet that hail from this port nearly all bear it, as do the small harbour boats. Among the smaller Syracusan coasters, characterized as are also the larger fishing boats by a well-marked projection beneath the bow that is the direct descendant of the classic rostrum, the oculus is also occasionally to be seen. The form assumed is local to Syracuse. It is most curiously conventionalized; the opening of the eye is shown elongated, but the pocket at the inner corner has been exaggerated, while from the opposite end rises a fringed line that curves over the eye in the fashion of a squirrel's tail (Pl. XX, fig. 1). None of the fishing boats shows any serious deviation from the type; in one case I noted the omission of the squirrel-tail eyebrow from the oculi of a small coaster. The fishing boats are sometimes gaily decorated in the region of the bow and along the upper strakes, as seen in Fig 18. Inside, they show little ornamentation, in contrast with those of Catania next to be described; it is noteworthy, however, that a half-sun with conventionalized human features is commonly painted on the short decking at the aft end (Fig. 20).

The fisherfolk of the neighbouring city of Catania, in spite of the flush of modernity and commercial activity that pervades its external life, are deeply imbued with superstition, and the cult of the oculus prevails nearly, if not quite as

¹ *Eustathius*, p. 827.

generally, as at Syracuse, where the links with Old Greece still subtly dominate the life of the people. In its form the Catania oculus is quite different from that of Syracuse; it shows a rounded eye with two obliquely curved lines above, the lower

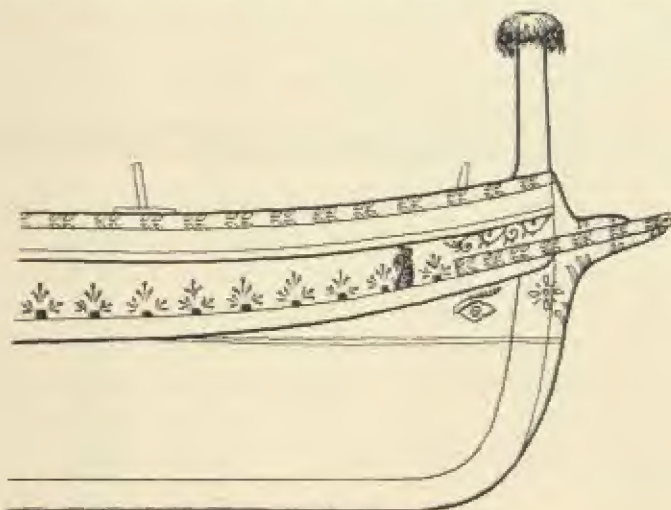


FIG. 18.—FORE END OF A MODERN SYRACUSAN FISHING BOAT. BESIDES A CHARACTERISTIC FORM OF OCULUS, THESE BOATS RETAIN THE VESTIGE OF A ROSTRUM; NOTE ALSO THE MOP-LIKE DECORATION OF THE STEM-HEAD.

one representing the upper eyelid, merging with the upper edge of the eyeball, and the other the eyebrow, free and parallel with the one below (Fig. 21 and Pl. XX, fig. 26.)

Living under the baleful shadow of Etna, with the remembrance of past catastrophes deeply bitten into their inner consciousness, the fishing community,



FIG. 19.—SOLAR DISC ON THE FORE DECK OF A CATANIAN FISHING BOAT.



FIG. 20.—SOLAR ORNAMENTATION ON THE AFT HALF-DECK OF A SYRACUSAN FISHING BOAT.

least changed as usual of the many elements of a great city, continue to seek protection from danger by propitiatory customs. These are fundamentally the same as in pre-Christian days, but are modified in detail to conform with their

present form of Christianity—Roman Catholicism. Thus it comes that on the Catanian fishing boats the greatest ornamentation of any in Sicily is lavished. Both inside and outside they are usually gaudily painted with figures of saints, cherubim, flower-garlands and arabesques. On the lower part of the high vertical stem head a figure of the heroine saint of Catania, Santa Agatha, is sometimes depicted, while on the stern quarters of many the figures of the three other saints greatly revered in Catania—San Alfio, San Filadelfo and San Cirino—are often painted, sometimes with considerable artistic skill. Some add to these the patron saint of the owner,



FIG. 21.—FORE END OF A FISHING BOAT OF CATANIA. FOR DESCRIPTION SEE TEXT.

painted on the stern post. But while the great majority of these boats bespeak, at least outwardly, the devout adherence of owner and crew to the most extreme form of Roman Catholicism and who appeal for protection to all the saints held in greatest veneration locally, a small proportion retain, either alone or in combination with Christian symbols and figures, what I am convinced is an older and pre-Christian scheme of decoration. In these, in addition to an oculus on the bow, the principal other ornamentation consists of anthropomorphic representations of the sun's disc. The absence in the majority of such boats of rich decoration and particularly of

Christian emblems and images of saints, so common in the smaller boats, is most significant. This type is usually characteristic of the larger fishing boats without high stem post. On these a large, rayed, solar half-disc, representing the rising sun, with rudely formed eyes, nose and mouth within the disc, is painted on both bows and also on the quarters (Fig. 22). This solar decoration is still more emphasized within the boat, where on the short fore-decking, usually painted blue, is a large red disc in the centre on which is the sun's anthropomorphic visage painted in black. Encircling the red disc is a wide yellow circle on which the rays are shown usually in a crenate pattern in black (Fig. 19). The blue ground obviously represents the blue of the Mediterranean sky, in which the risen sun is set, a fiery disc, emitting golden rays. It is significant to note that this solar ornamentation of the fore deck is common to all the fishing craft of Catania; those covered externally with figures of saints equally with those that cling to the representation of the sun on bows and quarters, and appear thus to condemn the protection of Christian saints. It would appear that the owners, like those Hindus who attend festivals at celebrated



FIGS. 22 AND 23.—SOLAR DECORATIONS ON THE BOWS AND QUARTERS OF CERTAIN CATANIAN FISHING BOATS.

Christian and Muhammedan shrines in India, desire to safeguard themselves fully by offering devotion to the old gods as well as to the new. In two extreme cases this dual devotion went so far that a rayed solar disc (Fig. 23) was painted on each bow and each quarter in company with a galaxy of local saints. In both instances the solar disc was low down just above the water line.

This association of the sun with the oculus goes far to prove that the Greek oculus was derived from Egypt, for there the sacred eye, whether as in the form of the uzat amulet or as the oculus on a boat, was closely identified with the sun. The 140th chapter of the Book of the Dead refers specifically to the sun as the eye. The sacred eye is also associated closely with Rā, the Sun God, for wherever this god's Sacred Bark is depicted, as in the papyrus of Ani, it bears this symbol on the bow. The Egyptian boat oculus and the uzat eye are usually considered to represent the eye of hawk-headed Horus, but it might be more correct to assign it a more generalized significance and simply to consider it as the symbol of the sun-god. Frazer says¹: "There appear to have been few gods in Egypt who were not at one time or another identified with him" (Rā). "Ammon of Thebes, Horus of the East,

¹ *The Golden Bough*, 2nd edition, vol. ii, p. 149.

Horus of Edfu, etc. . . . all were regarded as one god, the sun." Even Osiris was sometimes conceived of as Râ and named Osiris-Râ and an eye was one of his symbols. Hence if the Egyptian boat oculus be identified with the sun, the survival of the custom of painting an oculus and actual solar representations on the fishing boats of Catania and Syracuse assumes the utmost significance in any consideration of the origin of the ancient Greek oculus, from which the modern Sicilian oculus has undoubtedly been directly derived.¹

STARS.—In a few boats at Catania I saw a star substituted for the normal oculus : this variation, the exception at this port, becomes the accepted form at Messina, where, at the fishing village close to the Faro, many of the boats had a well-defined star on each bow (Fig. 24). This is a common amulet against the evil-eye in Sicily

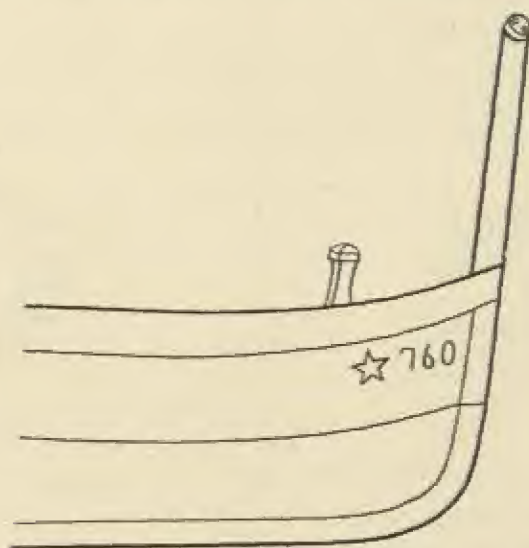


FIG. 24.—FORE END OF A MESSINA FISHING BOAT. A STAR HAS REPLACED THE OCULUS. THE HIGH VERTICAL STEM BEARS AT THE SUMMIT A SMALL WOODEN GLOBE ON WHICH ARE INCISED SMALL STARS.

and in Italy ; I have seen a large dried starfish (*Asterias*) hung above the doorway of a fisherman's house in a Calabrian village opposite Messina, and small ones are used as amulets among the Chioggia fishermen—an intensely superstitious folk. This substitution of a star for an oculus is very prevalent in Western Europe, and as we shall see is found quite commonly throughout Italy, France and Belgium. Its presence must be attributed to the loss of the feeling that boats are sentient (Gozo),

¹ It is also possible that the Sicilian representations of the sun are connected with the Greek custom of consulting the Delphic oracle when any Greek city contemplated the founding of an overseas colony. Phoebus Apollo being the god who spoke through the mouth of the oracle, and the god under whose auspices the settlers sailed forth and founded the new city, it may well be that the fishermen and sailors of the colony held Apollo in special reverence and sought his protection by the pictorial display of his emblem, the sun, upon their boats.

or under the protection of saint, spirit or deity (Sicily, India, Ceylon). In its place this symbol at best is but an amulet against the evil-eye (Italy), and at its lowest as it usually is (France and Belgium and even England), is a decoration put there out of mere habit or thoughtless imitation (Fig. 35).

Forms of the oculus, entirely different from those characteristic of the east coast of Sicily, occur in the ports on the west and northern coasts, centering in Trapani, built on the site of the Carthaginian and Roman port of Drepanum. This West Sicilian type of oculus is extremely degenerate, consisting of a large circle roughly daubed on each bow, with a central spot within. No care is taken to make the circle neatly nor to form it into an ornament. At Trapani it is nearly always confined to the small double-ended boats used for inshore work and for sponge-fishing at Stax (Tunisia). These boats have the bottom and lower part of the sides painted black usually, and it is on the upper part of this black area at the bow that this crude oculus is daubed. It is noticeable that the colour used is generally red (Pl. XIX, Fig. 29).

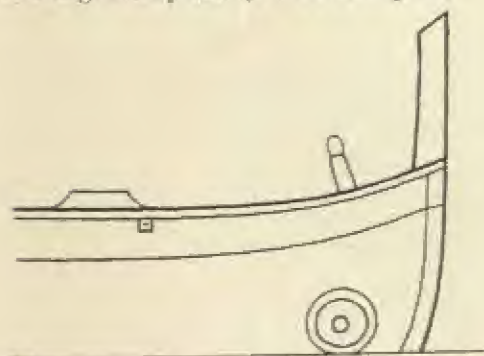


FIG. 25.—FORE END OF A SMALL FISHING BOAT OF PALERMO, SHOWING THE PECULIAR FORM OF CONVENTIONALIZED OCULUS—A LARGE RED CIRCLE AND CENTRAL DOT.



FIG. 26.—FISHING BOAT OF TERMINI IMERESE WITH A SMALL DISC, THE VESTIGE OF AN OCULUS, LOW DOWN ON THE BOW.

At Palermo the same kind of oculus is seen, and its location is the same, low down on the bow (Fig. 25). But there it is not confined to small fishing boats, though it is only among these that it is fairly common; occasionally but very rarely the large galley-like fishing boats used in deep-sea fishing follow the same custom; in one of the few cases I noted, both stem and stern were thus decorated, but the oculi on the bows had each two concentric circles, while those on the quarters had the normal single one. Several of the small boats had also one at each end on each side (Pl. XX, Fig. 2). A few of the small Palermo boats substitute a cross within the circle for the usual central spot.

At Termini Imerese, 37 kilometres east of Palermo, the rude circular oculus has degenerated into a red disc, $4\frac{1}{2}$ to 5 inches in diameter, painted on the bow (Fig. 26). Few boats, however, are thus decorated. Of two examined the discs

were low down, at or even just below the water line, painted on the extension upwards of the dark coloured bottom. In one instance there was only one disc on each bow and none on the stern. The other had one disc on the starboard side, but two on the port; these latter were arranged one behind the other. In this same boat two discs also occurred on each quarter of the stern arranged roughly in similar manner to those on the port bow. I have also seen, but rarely, red disc oculi on small Palermo fishing boats.

At Palermo, the properly formed oculus is also seen, but it is confined to the larger-sized fishing-boats used for drift netting and which have a high stern-post. These boats are often gaudily painted with longitudinal stripes of bright colour along the sides and with various decorative figures in one or more of these bands

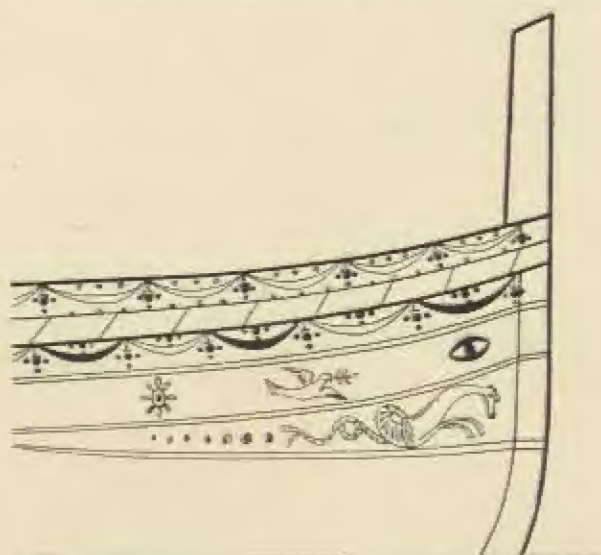


FIG. 27.—LARGE FISHING BOAT OF PALERMO WITH WELL-FORMED OCULUS AND LAVISH ORNAMENTATION.

(Fig. 27). The form of the oculus is a regular ellipse in black with a large black pupil in the centre. The lashes are usually distinguishable in freshly painted boats. Immediately below the oculus is a wedge-shaped area painted red. On this is commonly painted a mythological sea-horse, the head and fore-legs horse, the other half drawn out into a long coiled fish tail. On the tall stern post is often painted the figure of the Madonna. Unlike the somewhat related Catanian boats, there are no painted figures on the deck or on the combings, but it is suggestive that the short deck fore and aft is nearly always painted red, whatever be the scheme of colour bands on the outside, which varies with the fancy of the owner or the builder and for which no definite convention prevails.

Excepting the last described form of oculus, it would seem that the West Sicilian oculus has had a different origin from that of the East Coast. The latter,

so far as Syracuse and Catania are concerned, has carried on the Greek tradition far more strongly than other cities in the island; Greek colonization and domination began earlier and lasted longer there than elsewhere in the island, and indeed for some hundreds of years the two coasts were under separate domination—the east under the Greeks, the west first under the Phœnicians, and then under the Carthaginians. So, too, during Saracenic rule, the invaders' power and influence were far more strongly felt in the west than in the east, Palermo being their capital. It is therefore probable that the western type of Sicilian oculus is derived from a Phœnician source, and that this accounts for the radical difference in form. Or, possibly, though far less probably, the change from the anthropomorphic type to one that is at best a geometrical convention of the object is due to the Muhammadan objection to the former, as infringing one of the Prophet's strictest injunctions. It may even be that both influences have combined to produce the existing type. We have reason to believe from the evidence of their coins that the Phœnician oculus was of an exaggerated size and of simple form, hence if a specially large oculus, necessarily somewhat rounded, be converted into a purely geometric form without any semblance to the conventionalized human eye, the result is likely to be just such a form as is found in Palermo and Trapani—a large circle with a central spot.

Regarding the Palermo boats with well-formed conventional oculi related closely to those of the east coast, I am inclined to think that these are migrants from that locality. This type of boat closely resembles the one characteristic of that region and differs entirely from any to be found at Trapani, a port where changes are slow to take effect and not clamant for increased supplies of fish as is the metropolitan city of Palermo. That this particular type is not found in Trapani, is, I consider, very strong evidence that it is an intruder from another district. The wealth of outward adornment in contrast to the sombre and usually unornamented hulls of the Trapani and smaller Palermo boats, and the presence of Christian images and symbols, all connect these boats with those of Catania.

MALTA AND GOZO.—In Malta (apart from Valletta Harbour), and still more in the adjacent and more primitive island of Gozo, the cult of the oculus flourishes in greater vigour than anywhere else I know of except in Eastern Sicily; nowhere else are its powers so firmly believed in, and its influence against evil and bad luck recognized. Very many of the three principal types of fishing boats, *ferillas*, *lozzus* and *cayiques* (cayiques), follow the custom of placing oculi on their bows. The big Gozo cargo and passenger boats named *dghaisa tal-pass* also carry it; only on the harbour boats of Valletta has it degenerated and passed into other forms.

Each oculus on these boats is typically carved in relief in wood, and attached at the fore end of the triangular space at the bow lying between the sheered fore end of the wash-strake and the straight upper line of the colouring of the bottom and bilge strake. This triangular area is called the "moustache" (Maltese, *mustacc*);

it is usually painted red. Mr. G. Caruana, to whom I owe many of the details given in this section, informed me that if there be mourning in the family due to the death of a prominent member, the red is replaced by black or by dark blue. The beading under the wash-strake is also usually repainted blue or black in such circumstances.

The form of the oculus is characteristic. Great prominence is given to the eyebrow, as is also done at Syracuse; it is thick, heavy and bushy, its hairy nature represented by coarse oblique curved ridges as shown in Plate XIX, Fig. 33, and text-fig. 28. The orbit is elongated and rather narrow, a characteristic of the Maltese and East Sicilian oculus, in contrast with the rounded form seen in Western Sicily. Usually the eyebrow is painted yellow. The pupil is coloured dark blue or black, with the eyeball white outlined in dark blue. On a few boats I noted a degenerate form where the eyebrow was omitted.

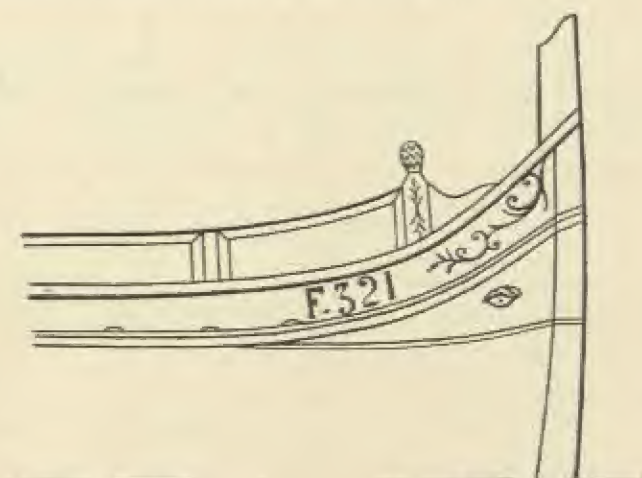


FIG. 28.—FORE END OF A MALTESE LOZZU. THE OCULUS HAS A VERY HEAVILY MARKED EYEBROW.

The use of the oculus is by no means universal in these islands; at Marsa Scirocco and at St. Paul's Bay in Malta, while oculi were common at the time of my visit, the majority of the boats were without them. In Gozo the custom prevails more generally, but forty years ago, according to Mr. Caruana, none had abandoned their use.

In Malta the oculus appears to be looked upon as little other than an evil-eye amulet. In Gozo an older conception prevails, the oculus being regarded, though vaguely, as the emblem of the guardian spirit of the boat. The fishermen, or certain of them, associate loosely the success or good luck of a boat with its "eyes." Mr. G. Caruana, who belongs himself to Gozo, related a significant incident concerning a newly-built fishing boat that had belonged to himself; carved oculi had as usual been affixed upon the "moustache" before launching. The boat had phenomenally good fortune on her first day's fishing, and this continued for some

time to the great satisfaction of owner and crew. But one morning it was found that one of the oculi had been slashed as by a knife and half cut away. It was inferred that some other fisherman was jealous of the boat's heavy catches of fish and had spitefully cut the oculus in the hope of breaking the run of good luck. The crew were much perturbed and angry, and a few days later Mr. Caruana found that a young fisherman belonging to the crew had slept nightly under the boat on the beach, in the hope of catching the miscreant red-handed—he expected him to return to complete his evil work. He told the owner that had he caught him he would have killed him—evidence of how seriously he viewed this treatment of the oculus.

According to Mr. Caruana, who has intimate acquaintance with Gozo fishermen, the older men look upon their boat as an animate being. They consider it as one of the family, and indeed as its most valued member. It is because of this feeling of its animate existence that they endow it with oculi in order to see its way—so said an old fisherman once to Mr. Caruana when he enquired about this. The sense in which they refer to it, also clearly indicates that they consider it essentially feminine. This information, together with that concerning the intimate association of the oculus with the good fortune of the boat, although vague, and essentially indefinite as it is bound to be in the case of men, like the Maltese, devoted to Roman Catholicism, falls into line with the theory that these ideas are the fragmentary relics of a belief entertained in pre-Christian days that by appropriate rites, a deity could be induced to take up habitation in a vessel and afford it protection and direction. As I have pointed out elsewhere,¹ this was usually, though not invariably, a goddess—hence the view of the feminine nature of boats and the common custom of referring to a vessel as “she” and not as “it.” In Valletta Harbour, where customs are subject to disruptive outside influence, being the headquarters of the British Mediterranean fleet and a cosmopolitan town, the elegant harbour passenger boat *dghajsa* (pronounced “dhaisa”), very seldom carries true oculi, but the bows nearly always bear some other device in substitution; in quite a number of cases a connection with the former can be traced. The first stage of change appears to be the continuation of the deeply grooved eyebrow into a circle, and the substitution of some symbol for the pupil. Commonly this symbol is a flag, generally that of Malta—a white St. George's cross on a red ground (Pl. XIX, Fig. 34). A related device is seen on the bows of British naval picket boats and cutters, and it would be of interest to ascertain if this has been derived from the Maltese custom or whether the reverse has taken place. The deeply-grooved eyebrow when continued into a circle would look exactly like a ring of rope, and for this it is usually taken. What strongly suggests that the origin of this corded circle is the eyebrow of the typical Maltese oculus is that it is typically coloured yellow like

¹ “The Origins and Ethnological Significance of Indian Boat Designs,” *loc. cit.*

the oculus eyebrow, and that it is cut in relief and fastened to the boat's planking in the same way as the true Maltese oculus.

Once the tradition of the inward significance of the oculus disappears, no law of custom remains to stabilize the form of the substituted device. At Valletta this results in a most instructive series of changes which transform the original symbol of a flag within a corded circle into a bird device. The first step in this transformation is the substitution of a plain yellow circle for the corded ring around the inscribed flag. The next stage is the omission of the circle, leaving the flag alone as the device on the bow. After this, we find some decorative device added to the flag, usually a bird carrying a small pennant in its beak. Finally we have the omission of the flag or pennant in its beak and the triumph of the bird, a favourite device; sometimes the bird carries a scroll in place of the flag, whereon may be painted the name of the boat.

Although the boatmen of Valletta have lost their understanding and respect for the oculus, they are none the less superstitious and anxious to avert their craft being overlooked by the evil-eye, by attaching to it some well-recognized protective amulet. The favourite one is that of the partially closed hand making the sign of the horns, the index finger and little finger extended. Sometimes this is placed on the bows in the place normally occupied by the oculus, but more frequently it is placed on the quarter. The Valletta boatmen either paint this symbol on their boats, the common custom, or make relief representations in wood or metal and attach these to the bows or quarters as they fancy. In Sicily and Italy a horseshoe is similarly fastened upon the quarter or stern occasionally.

The Maltese type of oculus would appear to have had a common origin with that of Syracuse, and there can be no doubt that the former is the more closely related to the parent form. In the Maltese oculus the eyebrow is realistic, though certainly its relative size to the orbit is exaggerated and its appearance coarsened. The Syracusan eyebrow is so conventionalized as to become a caricature of nature, but in the short thick strokes that arise from the basal line, it is easy to recognize the oblique markings in the Maltese form. This conclusion that the Maltese and Syracusan types are intimately related is easily understandable when we learn from the Maltese chronicles that Gozo was once depopulated and afterwards colonized by immigrants from Sicily. The fisher people of Malta are probably also largely of Sicilian origin. Hence we infer that the Maltese oculus preserves for us an ancient Sicilian type, from which the present-day Syracusan has degenerated. We would further infer from this that the Gozo people came from the vicinity of Syracuse.

PORTUGAL.—From various accounts of the fishing boats and small coasters operated by the Portuguese, and from models in museums, it is evident that the oculus custom is, or was till recently, as widely spread as on the east coast of Sicily. Indeed so closely akin are the Portuguese types that there can be no doubt that they arose

from a common source. The best account of these boats is that entitled *Estado Actual das Pescas em Portugal*, by A. A. Baldaque da Silva, published at Lisbon by the Ministry of Marine, in 1891. Figs. 29 to 32, reproduced from this work, show the range in ocular variation prevailing.

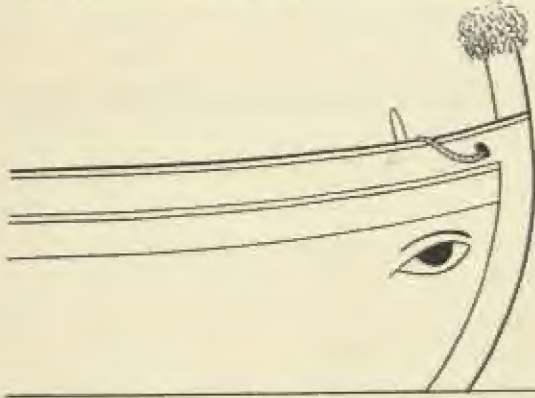


FIG. 29.—FORE PART OF A CAHIQUE DA COSTA OF ALGARVE, SETUBAL AND LISBON (AFTER BALDAQUE DA SILVA).

Taken generally, the more typical show a close resemblance to the oculi of Eastern Sicily and Malta. Especially was this so in the case of the oculus of the *muleta*, an old type of Portuguese craft that has died out of recent years. The *muleta oculi*, as in a model in the Science Museum, South Kensington (Pl. XIX. Fig. 21), are so closely akin to the Syracusan type, especially in the formation of the eyebrow, that if they are not nearly related by common origin, the two forms

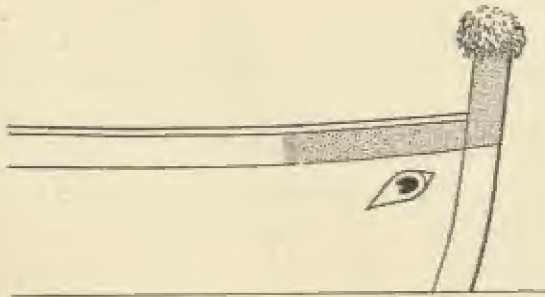


FIG. 30.—CANOA OF CEZIMBRA AND SETUBAL. COMPARE THE MOP-HEAD ORNAMENT ON THE STEM HEAD OF THIS BOAT AND OF THAT SHOWN IN FIG. 29 WITH THAT OF THE CATANIAN BOAT (FIG. 18). (AFTER BALDAQUE DA SILVA).

show a remarkable parallelism. This resemblance cannot, however, be fortuitous, for actual relationship is proved when we compare the design of bow in the two types, Portuguese and Syracusan. Reference to Fig. 18, a typical Syracusan fishing boat, shows that the stem head ornament is precisely the same as that of the cahique of Algarve, Setubal and Lisbon, depicted in Fig. 29, and also with the canoa

of Cezimbra and Setúbal (Fig. 30). All three show a form of turbaned stemhead derived from one on which the skin of a sacrificial goat (Sicily) or of a rabbit (Gozo) has been hung. Whether the intimate mediæval connection that once existed between Spain and Sicily has anything to do with this similarity seems more than doubtful; the more probable explanation perhaps is that this community of design in at least two outstanding features, between the boats of Portugal and those of Syracuse, indicates that there was a greater agreement of custom among the shore-dwellers of the Mediterranean 1,500 years ago or more, than we are usually prepared to admit; possibly the mop stemhead is a relic of Muhammadan influence.

The oculus of the fishing boat of Buarcos (Fig. 31) exhibits an unusual and degenerate form of oculus apparently of no special interest. That of the *calão* of Algarve (Fig. 32) is more interesting, as it is of that very rare form in which the eye is shown in profile. The only other instance of this form that I can recall is on a galley depicted on a coin of Leucas in Acarnania, where, as seen in Fig. 14, the foremost of three eyes shown upon the wash-strake appears to be of this form.

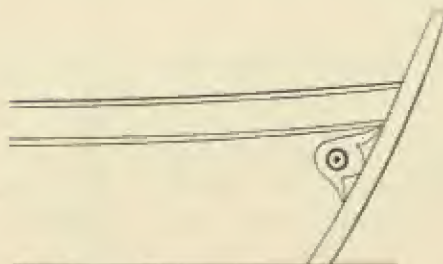


FIG. 31.—FISHING BOAT OF BUARCOS WITH GREATLY DEGENERATE OCULUS (AFTER BALDAQUE DA SILVA).

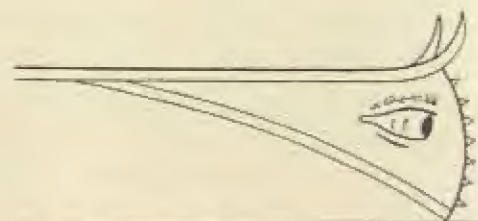


FIG. 32.—CALÃO OF ALGARVE WITH SPIKE-ARMED STEM AND REALISTIC OCULUS (AFTER BALDAQUE DA SILVA).

ITALY.—In Italy, as apart from Sicily, the use of the oculus is now comparatively rare on the western coast; on the Adriatic coast survivals are, I believe, still fairly common, but the information at my command is too meagre to permit of any descriptions being given.

In the neighbourhood of Naples and Leghorn—localities with which I am familiar—a true oculus is never seen now. At Naples, however, I have seen, but very rarely, a couple of rudely drawn circles on the tiny breakwater just behind the stem head (Fig. 33). These appear to be vestigial oculi. On the bows of a few other boats in this neighbourhood I have also seen indications in the form of small discs and rings (Fig. 34).

Much more frequent are stars on the bows in the place where the oculi are usually located, and similar to those already described from Messina. In one case a small coaster at Torre del Greco had both a circle and a star on each bow. The

object of placing stars on boats is, I was informed, as protection against the evil-eye.

At Leghorn I have also seen a few boats with stars on the bows.

FRANCE.—In France, especially on the south coast, the custom of placing stars on the bows of boats is more common than elsewhere. At Toulon, for example,

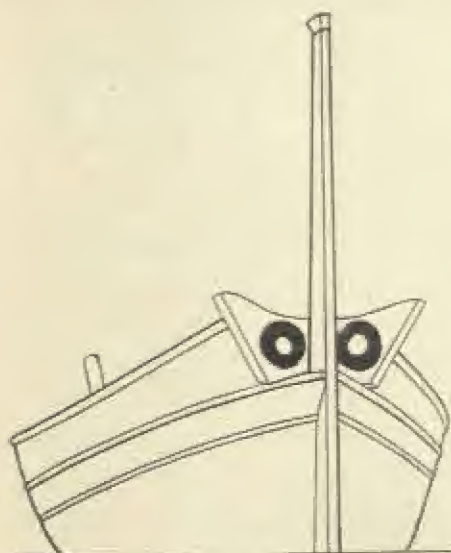


FIG. 33.—BOWS AND STEM OF A NEAPOLITAN FISHING BOAT. TWO CIRCULAR OCULI DECORATE THE FORE SIDE OF THE LITTLE BREAKWATER ABOARD THE STEM.

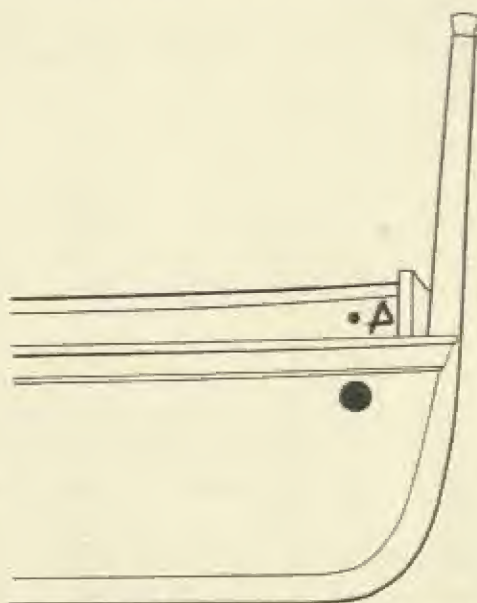


FIG. 34.—FORE END OF A NEAPOLITAN FISHING BOAT SHOWING OCULAR DEVICES.

out of 61 open fishing boats examined 16 bore stars on the bows, a few even had two (Fig. 35). The same boats have a peculiar form of stem terminal. The end of the stem-post is obliquely truncate: on each side is a cushion-like rounded cheek

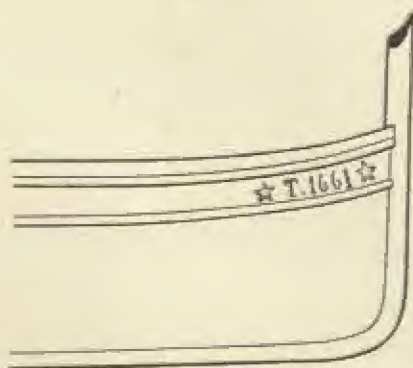


FIG. 35.—FORE END OF A TOULON FISHING BOAT, WITH THE BOWS DECORATED WITH TWO STARS; NOTE THE CUSHION CHEEK ON THE EXTREMITY OF THE PROLONGATION OF THE STEM.

made of a separate piece nailed on. These "cheeks" are generally painted red: the general appearance strikes one as distinctly phallic, but I am inclined to think that it is more probably a modification of the skin-clad knobbed stem-post once common in Sicily, Malta and Portugal. The star decoration of the bows is equally common at Marseilles.

On the Seine and the Rhone, and elsewhere in France and in Belgium, the canal barges and steam tugs in very many cases have a great coloured triangle (usually red), the "moustache" as it is named in Malta, on each bow. It is often margined with a narrow white line and in a considerable number of instances I have seen a star painted upon this red ground, one on each bow. There can be little doubt that this star decoration is a modification of the oculus, and that on the shores of the Mediterranean it is put on boats purely as an amulet against the evil-eye. In northern France and in England, where occasionally it is also met with, the original motive has been forgotten, just as has happened in respect of the field scarecrow, now never linked in the mind of English people with its original object as a device to protect crops from being "overlooked" and thereby injured. In such cases the star has become a meaningless decoration placed in position from some obscure instinct to follow this particular custom.

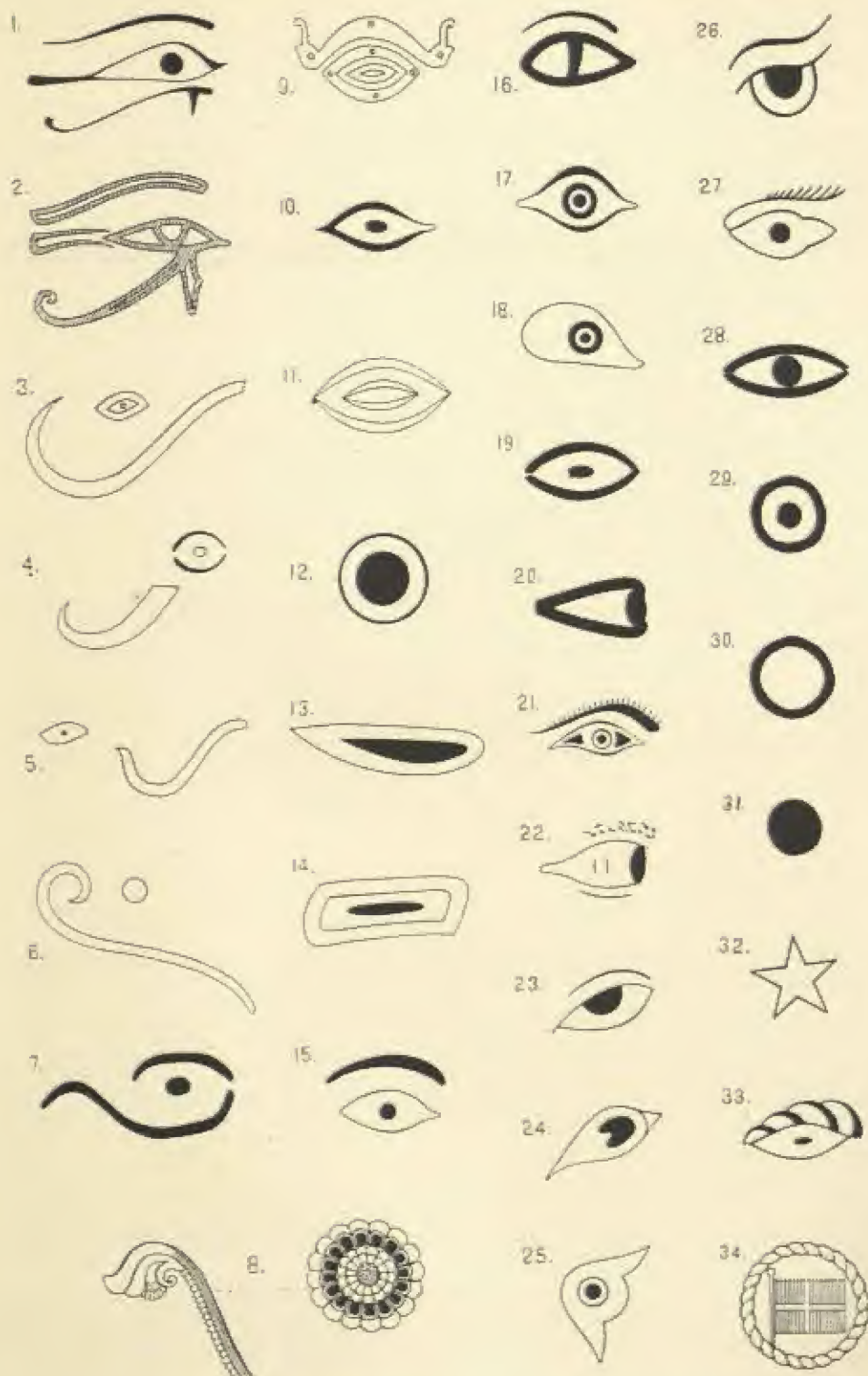
All the sketches illustrating this paper are made from my own photographs and field drawings with the exception of figures 7, 11, 12, 15 and 29 to 32. I have to thank my assistant, Mr. K. R. Samuel, for the great care he has taken to make the finished drawings both artistic and technically accurate; without them my notes would lose much of their value.

Postscript.

Since writing the preceding notes, I have found oculi with an associated device on Hindu-owned fishing boats belonging to the port of Tondi and to adjacent fishing villages on the western margin of Palk Bay. This observation extends considerably the southerly range of this custom in India.

These Tondi boats are large plank-built craft of canoe shape; each is provided with a stout balance-board made from a heavy palmyra plank laid athwart the boat amidships, the ends projecting several feet on each side. The stern head and the top of the stern-post are usually daubed vermilion in Hindu-owned boats; not so in those belonging to Muhammadans.

Each oculus is a crudely daubed ellipse with a round spot in the centre (Fig. 36); underneath it is a zig-zag line which I have no doubt is a degenerate form of the scroll device occasionally seen on the masula boats of the Coromandel coast and on the canal boats of the Kistna and Godaveri deltas. The fishermen can give no explanation of its significance other than that it is the customary device upon their boats.



SURVIVALS OF THE USE OF OCULI IN MODERN BOATS.



FIG. 1.—FORE END OF A MODERN SYRACUSAN FISHING BOAT.



(Photographs by J. Hornell.)

FIG. 2.—SMALL PALERMO FISHING BOAT, A CRUDE OCULUS AT EITHER END.

SURVIVALS OF THE USE OF OCULI IN MODERN BOATS.

The zig-zag is slightly swollen or enlarged at its hinder end; this probably represents the terminal short coil at the posterior end of the curved device seen in the Horus eye.

If my interpretation be correct, this observation of the degeneration of a scroll device into a zig-zag or chevron form, may help materially in arriving at the origin or motive of some of the crude decorative schemes seen upon the sides of other boats in South India.

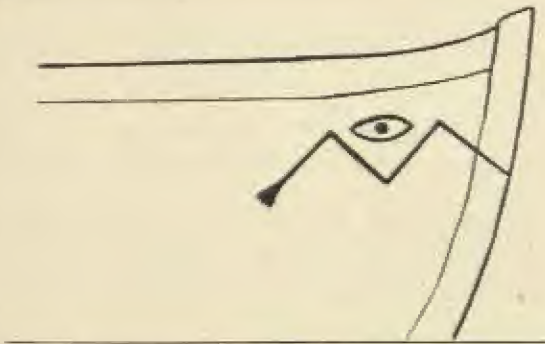


FIG. 36.—BOW OF A TONDL FISHING BOAT, SHOWING EYE AND ZIG-ZAG DEVICE BENEATH.

It is also probable that oculi were formerly in current use on indigenous Burmese river craft, for in the Pitt-Rivers Museum at Oxford there is a model of a large Burmese river boat, with outboard lateral platforms, provided with large oculi painted in black. Each has a well-marked eyebrow and also a curved line beneath, a form related closely to the Indian type and entirely different from the Chinese form seen on sampans in Burmese ports. The practice is probably local or becoming rare, for I observed oculi on no Burmese boats during a recent visit to Rangoon and Bassein.

DESCRIPTION OF PLATE XIX. TYPES OF OCULI.

- Fig. 1.—Upon a model boat from an Egyptian tomb (Louvre collection).
 Fig. 2.—Eye of the Sun-God upon a granite boat, XVIII dynasty (Br. Mus. Colln., No. 379).
 Figs. 3 and 4.—Oculi and "moustache" device upon two masula boats, Madras.
 Figs. 5 and 6.—Ditto on two canal boats, Kistna-Godavari deltas.
 Fig. 7.—Ditto on a *navya*, Colair Lake, India.
 Fig. 8.—Conventionalized lotus flower and flower-stalk on a Chilka Lake boat.
 Fig. 9.—Braes oculus, Benares.
 Fig. 10.—Carved and painted oculus on a Jafna dhoni, Ceylon.
 Fig. 11.—Incised oculus, Kalla dhoni, Point Calimere, India.
 Fig. 12.—A typical Chinese oculus.
 Fig. 13.—A typical Annamite oculus.
 Fig. 14.—Totemistic form of oculus, British Columbia.
 Fig. 15.—Oculus on a Queen Charlotte Island dugout.
 Fig. 16.—Rude oculus upon a terra cotta model boat, Amathus, Cyprus (c. 6th century B.C.).
 Figs. 17-20.—Ancient Greek oculi, c. 5th century B.C.
 Fig. 21.—Oculus of a Portuguese *muleta*.
 Figs. 22-23.—Other Portuguese oculi.
 Figs. 24-28.—Sicilian oculi (Greek type).
 Fig. 29.—West Sicilian oculus (Phœnician type).
 Figs. 30 and 31.—Degenerate oculi, Sicily and Naples.
 Fig. 32.—Star "oculus," Italy and France.
 Fig. 33.—Typical Maltese oculus.
 Fig. 34.—Maltese boat device probably evolved from the local form of oculus.

N.B.—In all these examples the oculi face to the right, i.e. they are from the starboard bow of the respective boats.

RELATION OF CRANIAL CAPACITY TO INTELLIGENCE.

By R. W. REID, M.D., F.R.C.S.,
Professor of Anatomy, University of Aberdeen,

AND

J. H. MULLIGAN, M.B., Ch.B.,
Research Assistant in Anatomy, University of Aberdeen.

DURING a number of years anthropometric observations have been made upon medical students attending the University of Aberdeen.

These were carefully taken in the Anthropometric Laboratory of the Anatomy Department of the University by the Professor of Anatomy and assistants, and may be considered as accurate as such observations can be, since they were conducted by trained anatomists in the quiet surroundings of a laboratory specially equipped for the purpose.

A statistical analysis of the observations so obtained is being made, and we thought that it would be of interest to find whether the observations pointed to a correlation between the capacity of a student's cranium and his intelligence.

In making this investigation, we decided to estimate the degree of correlation or concomitant variation by the Bravais-Pearson Product Moment Formula for the correlation coefficient.

Results of investigations in this connection have already been published.¹

In order to help to confirm or otherwise such results, we selected a group of 449 male students whose ancestors were of undoubted Scottish extraction, and who had studied the same subjects under similar conditions, and subjected the group to the simple test of comparing the capacities of the crania of the group with the sum of the marks obtained by the students of the group at the professional

¹ Karl Pearson and Alice Lee, "Data for the Problem of Evolution in Man," *Phil. Trans. Roy. Soc. Lond.*, vol. 196, p. 259; Karl Pearson, "On Correlation of Intellectual Ability with the Size and Shape of the Head (Preliminary Notice)," *Proc. Roy. Soc. Lond.*, vol. 69, pp. 333-342; Alice Lee and Marie A. Lewenz and Karl Pearson, "The Correlation of the Mental and Physical Characters in Man (Part II)," *Proc. Roy. Soc. Lond.*, vol. 71, pp. 106-114; Reginald J. Gladstone, "A Preliminary Communication on some Cephalometric Data bearing upon the Relation of the Size and Shape of the Head to Mental Ability," *Journ. Anat. and Phys.*, vol. 37, pp. 333-346; Karl Pearson, "On the Relationship of Intelligence to Size and Shape of the Head and to other Physical and Mental Characters," *Biometrika*, vol. 5, pp. 105-146; W. R. Macdonell, "On Certain Physical Characters of Aberdeen Medical Students," *Proc. Anat. and Anthropol. Soc. Univ. Aberd.*, 1906-1908, pp. 82-94.

examinations in those subjects, the standard of marking being uniform in these examinations.

To get a fairly accurate idea of the intelligence of the students, we chose three subjects of the medical curriculum which involved an exercise of memory, reasoning, and handicraft, viz., anatomy, physiology and pathology.

As observations on these students were made only at the beginning and at the end of their five years of medical curriculum, we were unable to obtain precise information as to the cranial capacities of these students when they were examined upon these subjects in the middle of their curriculum.

To gain an idea of the cranial capacity at that time, the average head length, head breadth, and head height were calculated for each student from measurements made at the beginning and end of his curriculum, and the product of these three averages was reckoned as an index of the cranial capacity of the student at the time when he was examined upon those subjects. In estimating this product due allowance was made for the thickness of the soft parts overlying the cranium.

The capacity so calculated would only correspond to the actual capacity at the mid-point of the course if the head measurements changed at a uniform rate; but for all practical purposes, as Macdonell says concerning the growth of cranial measurements of Scottish students in Aberdeen University during their medical curriculum, "The average growth . . . is so very small except as regards auricular height that it suggests a doubt whether it is worth while going to the trouble of taking second measurements." He estimates the percentage of growth for auricular height to be 3.5, and the percentage for head length 1.7 and head breadth 1.51 (*Proc. Anat. and Anthropol. Soc. Univ. Aberd.*, 1906-1908, p. 82).

Before coming to any finding as to the correlation between cranial capacity and intelligence of the student, we thought it necessary to take into consideration the age and stature of the student, as these might have an influence on the result. We therefore estimated the correlation coefficients between:—

- Average age and average cranial capacity ;
- Average stature and average cranial capacity ;
- Average age and average stature ;
- Average age and sum of marks obtained at professional examinations ;
- Average stature and sum of marks obtained at professional examinations ;
- Sum of marks obtained at professional examinations and average cranial capacity ;

and, by taking these into consideration, we calculated the partial correlation coefficient for the sum of marks and average cranial capacity ; in other words, the correlation coefficient between marks and capacity when allowance is made for variations in age and stature.

Table I shows that the correlation between the average age and average cranial capacity is very slight, and on calculation the correlation coefficient is found to be negligible, viz., -0.06 ± 0.03 .

From Table II it is seen that there is a definite correlation between the average stature and the average cranial capacity, and this impression is confirmed on calculation of the correlation coefficient, which is found to be $+0.30 \pm 0.03$.

An examination of Table III suggests that there is no correlation between the average age and the average stature, and this is proved on calculation of the correlation coefficient, which is found to be negligible, viz., -0.02 ± 0.03 .

On inspection of Table IV, it is evident that the correlation between sum of examination marks and the average age must be extremely low. Calculation shows that it is practically non-existent, for the correlation coefficient is -0.03 ± 0.03 .

There is no suggestion in Table V of a correlation between sum of marks and the average stature, and this impression is ratified by the correlation coefficient, which is very small, $+0.05 \pm 0.03$.

Table VI shows that there can be little or no correlation between sum of examination marks and the average cranial capacity, and it is found on calculation that the correlation coefficient between the sum of marks obtained by examination and the average cranial capacity is $+0.08 \pm 0.03$.

By taking into consideration the above correlation coefficients, it is manifest that the correlation between sum of examination marks and average cranial capacity can be but slightly influenced by age or stature, for there is practically no correlation between marks and either age or stature. This conclusion is made more precise by calculating the partial correlation coefficient between marks and capacity, and by finding that it is practically identical with the uncorrected coefficient, being $+0.07$.

This indicates that the results which we have obtained from the application of a simple uniform test point to the marks gained by the students observed as affording no index as to their cranial capacities, or, to put it in more general terms, that the size of the head of a student is no criterion by which to estimate the intelligence of that student as measured by the results of his examinations, thus confirming the opinion already arrived at by Pearson and Macdonell that anthropometric examination of a person's head is no guide to the intelligence of its owner.

We should wish to record our thanks to Miss Mary Riddoch, Student of Medicine and Science, for the help which she has given in connection with the calculations involved in the production of this paper.

Means and Standard Deviations.

Character.	Mean.	Standard Deviation.
Product of average cranial length, breadth and height suitably corrected for skin thickness ...	$3,593 \pm 8.0 \text{ c.c.}$	$267 \pm 6.0 \text{ c.c.}$
Sum of marks	175.78 ± 1.06	33.4 ± 0.75
Average age	$21.08 \pm 0.05 \text{ years}$	$1.42 \pm 0.03 \text{ years}$
Average stature	$173.48 \pm 0.19 \text{ cms.}$	$6.00 \pm 0.135 \text{ cms.}$

Correlation Coefficients.

Average age and average cranial capacity ...	-0.06 ± 0.03
Average stature and average cranial capacity ...	$+0.30 \pm 0.03$
Average age and average stature	-0.02 ± 0.03
Average age and sum of marks	-0.03 ± 0.03
Average stature and sum of marks	$+0.05 \pm 0.03$
Sum of marks and average cranial capacity ...	$+0.08 \pm 0.03$

Partial correlation coefficient for marks and capacity = $+0.07$.

TABLE I.—*Correlation between average age and average cranial capacity of 449 Scottish students (male) in a period of from 4 to 5 years of their medical studies at the University of Aberdeen. Cranial capacity expressed as the product of the cranial length, breadth and height.*

Average Age (in years).	Average Cranial Capacity (in cubic centimetres).														Total.
	2915-3025.	3025-3135.	3135-3245.	3245-3355.	3355-3465.	3465-3575.	3575-3685.	3685-3795.	3795-3905.	3905-4015.	4015-4125.	4125-4235.	4235-4345.	4345-4455.	
18	—	1	—	—	1	—	—	—	—	—	1	—	—	—	5
18½	—	—	2	1	1	1	1	1	1	—	—	—	—	—	8
19	—	1	—	2	4	3	4	2	2	3	1	—	—	—	22
19½	—	—	3	3	7	7	6	6	4	5	—	1	2	—	44
20	—	1	2	2	13	8	13	6	8	3	3	1	1	—	61
20½	—	2	3	7	10	12	7	9	8	3	4	—	1	—	66
21	—	2	3	6	10	6	9	9	9	4	3	1	—	—	62
21½	1	3	2	4	5	14	4	7	2	2	—	—	—	1	45
22	2	1	2	5	12	8	7	4	3	3	1	2	—	—	50
22½	—	1	2	3	6	5	3	4	4	—	3	1	—	—	32
23	—	1	1	—	3	2	2	3	3	—	—	1	1	—	17
23½	—	—	3	1	2	4	7	3	1	—	1	—	—	—	22
24	—	—	—	—	2	1	2	1	—	—	1	1	—	—	8
24½	—	1	—	—	1	1	—	—	—	—	—	—	—	—	3
25	—	—	—	—	—	1	—	1	—	—	—	—	—	—	2
25½	—	—	1	1	1	—	—	1	—	—	—	—	—	—	4
Total	3	14	24	35	78	73	65	57	45	23	18	8	5	1	449

Correlation coefficient = -0.06 ± 0.03 .

TABLE II.—Correlation between average stature and average cranial capacity of 449 Scottish students (male) in a period of from 4 to 5 years of their medical studies at the University of Aberdeen. Cranial capacity expressed as the product of the cranial length, breadth and height.

Average Stature (in centimetres).	Average Cranial Capacity (in cubic centimetres).													Total.	
	2015-3025.	3025-3135.	3135-3245.	3245-3355.	3355-3465.	3465-3575.	3575-3685.	3685-3795.	3795-3905.	3905-4015.	4015-4125.	4125-4235.	4235-4345.		4345-4455.
156.1-158	1	—	1	—	—	—	—	—	—	—	—	1	—	—	3
158.1-160	—	—	2	—	—	—	—	—	—	—	—	—	—	—	2
160.1-162	—	—	1	1	2	—	2	1	—	—	—	—	—	—	7
162.1-164	—	—	—	2	4	4	3	1	—	—	—	—	—	—	14
164.1-166	1	1	1	4	2	7	2	—	4	—	—	—	—	—	22
166.1-168	—	4	1	2	4	8	2	4	2	2	—	—	—	—	29
168.1-170	1	1	3	2	14	5	6	6	3	1	1	—	—	—	43
170.1-172	—	1	5	6	13	14	15	4	6	1	1	2	—	—	68
172.1-174	—	—	4	5	18	10	13	5	8	3	1	—	2	—	69
174.1-176	—	4	1	5	6	7	2	6	3	4	3	2	1	—	44
176.1-178	—	2	2	1	4	7	11	5	7	3	2	—	—	—	44
178.1-180	—	1	2	2	3	8	3	8	6	2	4	1	—	—	40
180.1-182	—	—	—	—	3	1	2	10	2	2	3	1	1	1	26
182.1-184	—	—	1	3	3	1	3	3	2	4	1	—	1	—	22
184.1-186	—	—	—	—	1	1	—	2	—	1	1	—	—	—	6
186.1-188	—	—	—	2	1	—	—	2	1	—	1	—	—	—	7
188.1-190	—	—	—	—	—	—	1	—	1	—	—	1	—	—	3
Total ...	3	14	24	35	78	73	65	57	45	23	18	8	5	1	449

Correlation coefficient = $\pm 0.30 \pm 0.03$.

TABLE III.—*Correlation between average age and average stature of 449 Scottish students (male) in a period of from 4 to 5 years of their medical studies at the University of Aberdeen.*

Average Age (in years).	Average Stature (in centimetres).																	Total.
	156.1-158.	158.1-160.	160.1-162.	162.1-164.	164.1-166.	166.1-168.	168.1-170.	170.1-172.	172.1-174.	174.1-176.	176.1-178.	178.1-180.	180.1-182.	182.1-184.	184.1-186.	186.1-188.	188.1-190.	
18	—	—	—	—	—	1	—	—	1	—	—	1	—	—	—	—	—	3
18½	—	—	—	—	2	—	—	2	—	1	—	1	—	1	1	—	—	8
19	—	—	—	—	1	—	1	3	4	5	3	4	—	—	—	1	—	22
19½	—	—	1	2	1	2	5	7	8	5	4	4	3	2	—	—	—	44
20	—	1	2	1	3	7	5	12	9	4	4	2	5	3	3	—	—	61
20½	—	—	—	3	1	5	8	12	12	8	5	1	5	4	1	2	1	66
21	—	—	1	1	4	5	6	6	11	1	6	9	5	5	—	1	1	62
21½	—	1	1	2	4	4	5	6	4	7	4	4	2	1	—	—	—	45
22	2	—	—	1	3	3	4	7	9	6	7	4	1	2	—	1	—	50
22½	—	—	1	1	1	1	3	5	7	1	3	3	3	2	—	1	—	32
23	—	—	—	1	—	1	2	3	1	2	3	—	1	1	—	1	1	17
23½	1	—	—	1	1	2	1	4	1	1	3	4	1	1	1	—	—	22
24	—	—	1	1	—	—	3	—	—	2	—	1	—	—	—	—	—	8
24½	—	—	—	—	1	—	—	—	—	—	1	1	—	—	—	—	—	3
25	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	2
25½	—	—	—	—	—	—	—	—	1	1	1	1	—	—	—	—	—	4
Total...	3	2	7	14	22	29	43	68	69	44	44	40	26	22	6	7	3	449

Correlation coefficient = -0.02 ± 0.03 .

TABLE IV.—Correlation between average age and sum of examination marks of 449 Scottish students (male) in a period of from 4 to 5 years of their medical studies at the University of Aberdeen.

Average Age (in years).	Sum of Examination Marks.														Total.
	72-87.	87-102.	102-117.	117-132.	132-147.	147-162.	162-177.	177-192.	192-207.	207-222.	222-237.	237-252.	252-267.	267-282.	
18	—	—	—	—	—	1	—	—	1	—	1	—	—	—	3
18½	—	—	—	—	4	—	2	—	1	—	—	1	—	—	8
19	—	—	—	—	2	8	8	2	3	1	—	—	—	—	22
19½	—	—	—	1	1	8	7	9	10	6	—	1	—	1	44
20	—	—	2	3	6	11	8	14	4	7	4	2	—	—	61
20½	1	—	4	2	7	11	11	10	8	8	3	1	—	—	66
21	—	1	1	3	10	16	5	13	5	2	5	1	—	—	62
21½	—	—	2	2	4	7	5	10	4	6	3	2	—	—	45
22	—	1	—	6	—	6	8	7	9	8	1	3	—	1	50
22½	—	—	1	2	5	4	4	9	3	1	1	1	1	—	32
23	—	—	1	2	1	2	4	1	1	—	4	1	—	—	17
23½	—	1	—	1	3	4	5	4	—	2	2	—	—	—	22
24	—	—	—	—	—	1	3	—	1	1	2	—	—	—	8
24½	—	—	—	1	—	1	—	1	—	—	—	—	—	—	3
25	—	—	—	—	—	1	—	1	—	—	—	—	—	—	2
25½	—	—	1	—	—	3	—	—	—	—	—	—	—	—	4
Total ...	1	3	12	23	43	84	68	81	50	42	26	13	1	2	449

Correlation coefficient = -0.03 ± 0.03 .

TABLE V.—*Correlation between average stature and sum of examination marks of 449 Scottish students in a period of from 4 to 5 years of their medical studies at the University of Aberdeen.*

Average Stature (in centimetres).	Sum of Examination Marks.														Total.
	72-87.	87-102.	102-117.	117-132.	132-147.	147-162.	162-177.	177-192.	192-207.	207-222.	222-237.	237-252.	252-267.	267-282.	
156-1-158	—	—	—	1	—	—	1	—	—	1	—	—	—	—	3
158-1-160	—	—	1	—	—	—	—	—	—	1	—	—	—	—	2
160-1-162	—	—	—	—	1	—	—	1	3	—	1	1	—	—	7
162-1-164	—	—	—	—	1	1	3	4	3	1	1	—	—	—	14
164-1-166	—	—	—	3	4	5	2	5	1	1	1	—	—	—	22
166-1-168	—	1	1	2	4	6	3	5	3	—	2	1	—	1	29
168-1-170	—	—	1	6	3	9	6	7	4	2	3	2	—	—	43
170-1-172	—	—	2	3	10	13	10	13	4	9	3	1	—	—	68
172-1-174	1	1	2	3	1	11	9	12	10	11	6	2	—	—	69
174-1-176	—	1	1	1	3	11	10	6	5	3	2	1	—	—	44
176-1-178	—	—	1	1	4	4	12	10	7	1	2	2	—	—	44
178-1-180	—	—	—	1	5	11	4	8	4	3	3	—	—	1	40
180-1-182	—	—	3	1	4	5	4	3	1	4	1	—	—	—	26
182-1-184	—	—	—	1	2	4	2	4	2	5	—	1	1	—	22
184-1-186	—	—	—	—	—	1	2	2	—	—	—	1	—	—	6
186-1-188	—	—	—	—	1	2	—	1	1	—	1	1	—	—	7
188-1-190	—	—	—	—	—	1	—	—	2	—	—	—	—	—	3
Total	1	3	12	23	43	84	68	81	50	42	26	13	1	2	449

Correlation coefficient = $+0.05 \pm 0.03$.

TABLE VI.—*Correlation between sum of examination marks and average cranial capacity of 449 Scottish students (male) in a period of from 4 to 5 years of their medical studies at the University of Aberdeen. Cranial capacity expressed as the product of cranial length, breadth and height.*

Average Cranial capacity (in cubic centimetres).	Average Marks.														Total.
	72-87.	87-102.	102-117.	117-132.	132-147.	147-162.	162-177.	177-192.	192-207.	207-222.	222-237.	237-252.	252-267.	267-282.	
2915-3025	—	—	—	2	—	—	—	1	—	—	—	—	—	—	3
3025-3135	—	—	—	1	2	4	4	1	1	—	1	—	—	—	14
3135-3245	—	—	1	5	2	2	2	5	3	3	1	—	—	—	24
3245-3355	—	1	1	3	4	3	5	6	6	5	—	1	—	—	35
3355-3465	—	—	3	3	8	13	11	21	7	4	4	4	—	—	78
3465-3575	—	—	3	1	11	12	11	16	4	6	5	2	—	2	73
3575-3685	—	—	—	4	2	10	10	11	8	6	4	1	—	—	65
3685-3795	—	1	1	2	7	9	9	7	5	7	6	2	1	—	57
3795-3905	1	1	—	—	4	10	10	7	4	5	1	2	—	—	45
3905-4015	—	—	1	1	2	4	2	3	5	3	1	1	—	—	23
4015-4125	—	—	1	1	1	4	2	2	6	1	—	—	—	—	18
4125-4235	—	—	—	—	—	2	2	—	1	2	1	—	—	—	8
4235-4345	—	—	—	—	—	2	—	1	—	—	2	—	—	—	5
4345-4455	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
Total	1	3	12	23	43	84	68	81	50	42	26	13	1	2	449

Correlation coefficient = $+0.08 \pm 0.03$.

THE LANGUAGES OF THE WESTERN DIVISION OF PAPUA.

By SIDNEY H. RAY, M.A., F.R.A.I.

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I.—INTRODUCTION.

THE Western Division of Papua formerly included the whole of the country between the Netherlands boundary and the western mouth of the Purari river, and extended inland to the boundary of the former German territory of Kaiser-Wilhelmsland. In 1918 the difficulty of supervising this vast area was reduced by the formation of a new Division—the Delta Division—between the western banks of the Turama and Purari rivers.

The inhabitants of the Division are Papuans, and all the languages are of the character described in the Reports of the Cambridge Anthropological Expedition to Torres Straits, III, 1907, as Papuan. No Melanesian language is found in this part of the territory of Papua.

In the present notice it has been found convenient to include the languages spoken just over the western border of the Division in Netherlands New Guinea and that of the Eastern Islands of Torres Straits. One language of the Division is also found beyond its eastern border in Goaribari Island, in the Delta Division.

The first records of the languages of this part of New Guinea relate to the islands of Torres Strait, and antedate those of the mainland by more than forty years.

A few words from Eastern Torres Straits were recorded by Flinders, and in July, 1822, when the ship "Richmond" was anchored off Murray Island, Mr. T. B. Wilson made a vocabulary. This was unfortunately lost when the "Governor Ready" was wrecked in the Straits in 1829, but the compiler recalled some of the words in his *Narrative of a Voyage*.¹ The earliest preserved list was the work of an English officer, who spent four days (June 19 to 23) at Murray Island in 1833.² Capt. P. P. King's account of the voyage in search of the "Charles Eaton," which was wrecked in the Straits in 1834, contained a vocabulary printed from the MS. of

¹ Cf. Bibliography, No. 96.

² Cf. Bibliography, No. 31.

John Ireland, one of the survivors of the wreck.¹ A more important vocabulary of the Miriam language was collected during the voyage of the "Fly," and printed with another version of the earlier vocabulary in Jukes' *Narrative*.²

The foundation of the London Mission in 1871 increased the knowledge of the language at Murray Island, and a spelling sheet was printed in 1873. The Rev. A. W. Murray's account of the founding of the Mission (1876) contained a new vocabulary,³ whilst that of the Rev. W. W. Gill (1876) contained the numerals of Mawata, the first words from the mainland.⁴ The first book in the Erub dialect of Miriam appeared in the same year.⁵ The first vocabulary from Mawata was published by D'Albertis in 1880.⁶ In 1888 vocabularies of Mawata were collected by Dr. Haddon, Rev. E. B. Savage, and Mr. E. Beardmore, and a beginning was made in printing the language.⁷ The existing material in all the languages of the Fly Delta was investigated by Dr. Haddon and myself from 1891 to 1897.⁸ Between 1898 and 1907 the Annual Reports on New Guinea made known several languages, viz., Kiwai in 1889-90 and 1900-1, Dabu in 1890-1, Bangu and Dungenwab in 1895-6, and Jibu in 1900-1.⁹ Besides these, vocabularies had been collected by the Rev. James Chalmers, the Rev. E. B. Riley, and others, which made it possible to give, in the Cambridge Report,¹⁰ vocabularies representing fourteen languages of the present Western Division of Papua.

Since 1907 the zeal of the officers administering the Territory of Papua has considerably increased the number of languages known. The mission has extended under the care of the Rev. E. B. Riley. The Kiwai language has become well known and used in translations. A great number of the vocabularies seem to overlap, and appear with slight variations under different names. The present sketch is an attempt to indicate the grouping of the various apparently related languages.

II.—LIST OF LANGUAGES.

I. *Languages West of the Fly River.*

MERAUKÉ GROUP.

Jey.—Upper Merauké River.

Méranké.—Coast between Kumbé River, Netherlands New Guinea and the British Boundary.

Tugéri.—Coast between 138° and 141° E. long.

Murinda-Nim (A.R. 1913-14) or Marind-Anim (A.R. 1917-18).—Apparently the same language as the Tugéri.

Toro.—Bensbach River, on boundary in Netherlands Territory.

¹ Cf. Bibliography, No. 44.

² Cf. Bibliography, No. 62.

³ Cf. Bibliography, No. 35.

⁴ Cf. Bibliography, Nos. 89, 90.

⁵ Cf. Bibliography, Nos. 66-69.

⁶ Cf. Bibliography, No. 43.

⁷ Cf. Bibliography, No. 39.

⁸ Cf. Bibliography, Nos. 3, 4.

⁹ Cf. Bibliography, No. 75.

¹⁰ Cf. Bibliography, No. 16.

BANGU GROUP.

Bangu.—Morehead River.

Wandatokwe.—Villages of Tungaka and Perem (? Peremka), on west bank of Upper Morehead River.

Tokwasa.—Villages of Asingabaar and Babiri inland from west bank of the Morehead River, and village of Tonda east of the Lower Morehead River.

SANANA GROUP.

Sanana.—Lower Morehead River near coast.

Potoia.—Villages of Wala, Tombuke, Mugakom and Miboni, inland between Morehead River and Wasi Kasa River.

Noraia.—Villages of Walal, Mata and Ruma on east bank of Upper Morehead River.

Nombuo.—Villages of Taberam, Bebdibem, Gembet, Pongali, Derder and Rudal between the Morehead River and Wasi Kasa River. The Dorro is related to this.

Nenium.—Wakamare Tribe north-east of Bebdibem.

Karigari.—Village of Gaganabu, 16 miles north of Taberam.

Tanjuama.—Village of Gorigol, about 32 miles N.N.E. of Taberam.

PARB GROUP.

Dungerwab.—Wasi Kasa River.

Dapo.—Torzo tribe on Strachan Island, Mai Kasa River and Wasi Kasa River, and Bugi Tribe on east bank of the Mai Kasa River.

Parb.—Off Wasi Kasa River.

BUGI GROUP.

Bugi.—Mouth of Mai Kasa River.

Mbayaka.—Jindabira Tribe in villages of Demeri, Boiboi, Mikadal, Mangal and Kuangatabin, north of the Mai Kasa and Wasi Kasa.

Dibolug.—Warubi Tribe in villages of Tobilawa and Kopu about 30 miles north-east of Bebdibem, and Dibolug Tribe in villages of Gujiguji and Dumbasisi about 18 miles north-east of Bebdibem. Both are north of the Wasi Kasa River.

Agob.—Agob or Wongob tribe in villages of Bunkukalam west of Pahoturi River.

Ngamai-iki.—Tupadibi tribe in villages of Bere, Wun, Gaima and Taberstat, about Mabudauan Hill.

Dabu.—Village of Sigabadra and other villages on the west side of the Pahoturi River.

Gijara.—Gijara tribe in Togo village on east side of Pahoturi River.

MASINGARA GROUP.

Jibu.—Bush village at head waters of Binaturi River.

Oriomo.—Oriomo River.

Masingara.—Inland from Mawata.

Kunini.—Coast east of Binaturi River.

2. *Languages of the Fly Delta.*

KIWAI GROUP.

Mawata.—Mouth of the Binaturi River.

Perem.—Bampton Island.

Turituri.—Village near Mawata.

Sui.—On east coast of entrance to Fly River.

Kiwai.—Villages on Kiwai Island (Iasa).

Domori.—Island in Fly north-west of Kiwai.

Wabuda.—Island between eastern mouth of the Fly and Bamu River. The same language with differences in accent is spoken at Gesoa and Sagero.

Hiwi.—Hiwi tribe in villages of Kaibenapi, Genapi, Wagami and Bobonapi, Wariadai and Sarau north of Damira on the Fly River.

Hibaradai.—Villages of Hibaradai (or Irotonapi), Mawadai (or Hauwara) and Eriga north of Damira on Fly River.

Sisiami.—Village on the Bamu River.

Damerakaram.—Village between the Fly and Bamu.

Dibiri.—Dibiri tribe in Buniki village, on Buniki Creek, one mile from its junction with the Bamu, also at Pirupiru, between Buniki and the Gama River.

Urama.—Kinomeri village on Urama Island between Era Bay and Paia inlet.

Iwainu.—Iwainu tribe in village of Gigori on Era River.

——— Era River.

——— Turama River.

Kerewa. Village on Goaribari Island.

Goaribari.—Goaribari Island.

MIRIAM GROUP.

Miriam.—Mer (Murray Island), Erub (Darnley Island), and Ugar (Stephen's Island) in Eastern Torres Straits.

GOGODARA GROUP.

Gaima.—On west bank of Fly River opposite north-western ends of the Islands of Gebaro and Kiwai.

Girara.—Between left bank of Fly River and Head waters of the Bamu.

Gogodara.—Villages inland from Gaima, Aketa, Barima, Bugi, Dadi, Dedo, Dogona, Isago, Kewa, Kotari, Kubu, Pigi, Urado, Warigi and Wasatura. One language for the whole district with local differences.

Adiba.—Village inland between Aramia River and the Fly River.

Waruna.—Village inland from north bank of Fly River, opposite Aduru or Suwami.

Tapapi.—Villages of Ubaroniara and Bogabwi, close to and north of the source of the Sagero Creek, a tributary of the Lower Fly.

3. *Languages of the Fly Basin.*

NAUSAKU GROUP.

Nausaku.—Village north of the Karigari country, between Alligator Island and the D'Albertis Fairfax Group.

Toki.—Marshes at head waters of a river running into the Fly River at the spot where the non-existent Canoe Island is marked on some maps.

TAGOTA GROUP.

Tagota.—Village on south bank of Fly River in $8^{\circ} 25'$ south lat. and $142^{\circ} 28'$ E. long.

Pisirami.—South bank of Fly River just beyond Daumori Island.

TIRIO GROUP (?).

Tirio.—Village on western bank of lower Fly River.

UPPER FLY GROUP.

Village Y.—East bank of Upper Fly above Everill Junction in about $7^{\circ} 20'$ S. lat.

Village Z.—(? Bubwa) east bank of Upper Fly near MacGregor's 211 m. camp.

Lake Murray.—Near junction of Fly and Strickland Rivers.

TEDI GROUP.

Amnat.—East side of Tedi (Alice) River, Upper Fly, a few miles inland from the bank in about $5^{\circ} 57'$ S. lat.

Marapka.—Villages on Wuk River a small tributary of the Tedi (Alice) River on its western side a few miles north of 6° S. lat.

Ort-Ambip.—West bank of Tedi River, about three miles north of 6° S. lat.

Kandam.—Head waters of Muia River in Netherlands New Guinea close to boundary and north of 6° S. lat.

Anu.—Lower Muia River on boundary 6° S. lat.

III.—NOTE ON ORTHOGRAPHY.

The spelling adopted in this notice is that of the Annual Reports on New Guinea or Papua, and follows the *Rules for the Spelling of Geographical Names for British Official Use*, published by the Royal Geographical Society.

IV.—NOTES ON GRAMMAR.

The grammatical structure of a great many languages in the list is quite unknown. The best known is the Kiwai, which has been accurately investigated by the Rev. E. B. Riley. His grammar is, however, only in MS. Mr. Riley has also compiled some brief notes on the structure of Wabuda, Tirio, Kunini and Parb. Dr. W. M. Strong has written some notes on Sanana and Wabuda. A few phrases in other languages are discussed in the Cambridge Report (pp. 291-301), and a Kiwai grammar is given on pp. 302-319.

1. *Nouns*.—In Kiwai the suffix *-ro* denotes the singular number. Dual, Trial and plural are indicated by words following or preceding the noun, or by the verbal affixes: e.g. *nī besere-ro*, this girl; *nī besere toribo* or *nī netewa besere toribo*, these girls two, or these two girls two; *gi gugu poto-ro*, those stars three; *noro nau mere r-orumai*, he one child calls-one; *nouro netewa mere toribo r-irumaiana*, he two children two he-calls-two; *nouro netewa naubi mere r-irumaibi*, he two one children he-calls-three.

In Sanana, Dungenwab and Parb the noun undergoes no change for number.

In Kiwai the noun is declined by postpositions: *mere r-adau*, boy ran; *gi merero nau sio ai-gopia*, that boy one dog it-killed (*opia* kill, *g* sign of past, *ai* sign that verb has an object); *disare arima*, kangaroo blood; *ota iopa*, tree fruit; *nou pari-to godoro*, he garden-into entered; *mai nogu moto ito*, I go house to; *nou moto rudo gogu*, he house from went; *nou sio gaute torego roiti*, he dog through fear has; *pariwa*, in garden; *tuito* or *tuto*, with hand; *gi sioro wasina ai-r-asome wototorope ito*, that dog meat it-licks-it tongue with.

In Parb nouns are declined by suffixes: *mongo-d*, to the house; *wel-ud*, to the tree; *mongo-man*, from the house; *wel-eman*, from the tree. In Sanana: *Bagenda chi*, Bagenda's tooth.

Kunini also employs suffixes: *Daru-me*, to Daru; *Kunini-ze*, in Kunini.

2. *Pronouns*.—These appear in the various lists as follows:—

	1st Person.	2nd Person.	3rd Person.
Mérwaké	<i>Sing.</i> nok <i>Plur.</i> nok wo	wo wo-onim-epe	epé onim epe
Peremka	<i>Sing.</i> tea	fur	sier
Sanana	<i>Sing.</i> yenda <i>Dual.</i> tavena tand <i>Plur.</i> yendayim	kwam povena tand penayim	yamün yavena tand yava bar (?)
Dorro	<i>Sing.</i> yenda	boim	—
Karigari	<i>Sing.</i> jona	bir	—
Tanjuama	<i>Sing.</i> yende <i>Plur.</i> manuti-yin-uts	boim boim	he amburu-be maringa

		1st Person.	2nd Person.	3rd Person.
Dungerwah	...	<i>Sing.</i> yond <i>Dual.</i> yonder, yondel <i>Tripl.</i> tebe, tebender <i>Plur.</i> teba, argobe-milba- mudi	pomo, pom peber poinpom po-milbamudi	pe, yemo, yemom, yandi — — yebe, pēē, yebum, yebender
Parb	...	<i>Sing.</i> yond <i>Dual.</i> tebene <i>Plur.</i> yond	pom pebene pom	pe petumbi pe
Bugi	...	<i>Sing.</i> ngana <i>Plur.</i> (incl.) yibi <i>Plur.</i> (excl.) ba	bea bibī —	bo bo —
Dibolug	...	<i>Sing.</i> ginunga	bagud	—
Dabu	...	<i>Sing.</i> ngana, gna, una <i>Dual.</i> bungungaainev <i>Plur.</i> ngami, gagimauidag	bōngo — hibi, hibidagwe mā	bo, bwainen — ubidag, dedonengdan —
Gijara	...	<i>Sing.</i> kata	—	—
Jibu	...	<i>Sing.</i> kono <i>Plur.</i> jogjog rega	mano jogjog rega	miki iki
Masingara	...	<i>Sing.</i> ane <i>Dual.</i> mane-ane, mine <i>Plur.</i> ine	mane nenebinamo —	teme-tanbe teme —
Kunini	...	<i>Sing.</i> ane <i>Dual.</i> mine <i>Plur.</i> ine	mane wene wene	tabe (masc.), ta (fem). tepi tepi
Kiwai, Domori, Turituri and Sui		<i>Sing.</i> mo <i>Dual.</i> nimoto <i>Tripl.</i> nimoibi <i>Plur.</i> nimo	ro nigoto nigoibi nigo	nou neito neibi nei
Hiwi and Hibaradai		<i>Sing.</i> na	eme	—
Sisiami	...	<i>Sing.</i> mo <i>Plur.</i> nimo	oro nio	nou neio
Wabuda	...	<i>Sing.</i> mo, marapu <i>Dual.</i> nimotere, nimoterepu <i>Tripl.</i> nimobi, nimobipu <i>Plur.</i> nimo, nimopu	oro, arapu nigotere, nigoterepu nigobi, nigobipu nigo, nigopu	nuwabu, nuwaburopu nutere, nuterepu nubi, nobipu nuwababigo
Buniki	...	<i>Sing.</i> mo <i>Plur.</i> nio	ro nio	nouwe neis
Dibiri	...	<i>Sing.</i> domiara (?)	ororora (?)	norō (masc.), norirario (fem.) (?), kiphō (neut.) (?)
Pirupiru	...	<i>Plur.</i> nimo <i>Sing.</i> mo'o <i>Plur.</i> nimo	topira (?) oro —	edirubiru nou nei
Urama and Kerewa		<i>Sing.</i> mo	ro	—
Iwainu	...	<i>Sing.</i> mo	bouri	—
Era R.	...	<i>Sing.</i> moka	mo (?)	dubuata (= other man)
Turamu	...	<i>Sing.</i> moto	naroi	dubuata
Goaribari	...	<i>Sing.</i> mo, oma, mo <i>Plur.</i> nimo	ro, rou —	no, dubuata, nari, nou nei
Miriam	...	<i>Sing.</i> ka, kaka <i>Dual.</i> mi (incl.) ki (excl.) <i>Plur.</i> meriba (incl.) keriba (excl.)	ma, mama wa — waba —	e, abi wi — wiaba —

	1st Person.	2nd Person.	3rd Person.
Gaima	<i>Sing.</i> na <i>Plur.</i> ŋē	ē ē	e dā
Girara	<i>Sing.</i> nepe (= me)	—	yama
Gogodara and Waruna	<i>Sing.</i> ne <i>Dual.</i> sesake <i>Plur.</i> se	e — se	de — de
Adiba	<i>Sing.</i> na <i>Plur.</i> se	e —	— —
Tapapi	<i>Sing.</i> na	ma	—
Karami	<i>Sing.</i> toqgue	kuria	—
Tirio	<i>Sing.</i> nokao <i>Dual.</i> gainisigia <i>Triad.</i> gaimisoragi <i>Plur.</i> knika, gaiga	okao, ogao zogaomisigi zogaomisoragi sokao, zogao	iki, igi igamisigi igamisoragi ika, iga
Amnat	<i>Sing.</i> game	name	—
Marapka	<i>Sing.</i> ne	ep	—
Ort. Ambip	<i>Sing.</i> ne	ep	—
Kandam	<i>Sing.</i> ne	tep	—
Anu	<i>Sing.</i> ne	ep	—
Muia	<i>Sing.</i> ne	lep	—

3. *Verbs.*—Very little is known of the verbal forms in the languages of the Western Division. Rev. E. B. Riley has studied the Kiwai verb and also given some paradigms in Kunini and Parb. Dr. W. M. Strong has collected some Sanana expressions. The Polynesian teachers who wrote the vocabularies of Turituri, Tirio and Masingara were quite unable to understand the intricacies of the Papuan verb. West of the Fly River we have verbal expressions as follows:—

Sanana. Verb "give."

Present.	<i>Sing.</i> 1. yenda kwarūm	<i>Plur.</i> 1. yendavim yaramavūm
	2. kwam akwarūm	2. pemavim yaramavi
	3. yamūm warūm	3. yeave tauarūm
Past.	<i>Sing.</i> 1. yenda nomaramūm	<i>Plur.</i> 1. yendavim nomaramavūm
	2. kwam nomaramūm	2. pemavim turaramavi
	3. yamūm taurarūm	3. yeave nomaramūm
Future.	<i>Sing.</i> 1. yenda te tokwarūm	<i>Plur.</i> 1. yendavim te chomaramungūm
	2. kwam te chomaramūnga	2. pemavim te kwaramūng
	3. yamūm te tokwaramūnga	3. yeave te tauramūng

Cf. Dungenwab forms in Cambridge Report, III, 294.

Parb. Verb "go."

Present. Sing. 1. *yond wongon*
2. *pom karm*
3. *pe yongon*

Dual. 1. (incl.) *yond iengeren*
1. (excl.) *yond inyon*
2. *pom gabulen*
3. *pe iengeren*

Present. Plur. 1. (inc.) *yond yinidarn*
2. *pom garbulain*
3. *pe cingon*

Past. Sing. 1. *yond wongomaron*
2. *pom nongomaron*
3. *pe teingomaron*

Plur. 1. (incl.) *yond yingomaron*
1. (excl.) *yond iengergermon*
2. *pom engomaron*
3. *pe tangomaron*

Cf. *Dungerwab* forms in *Cambridge Report*, III, 294.

Kiwai.

The verbal stem is modified by suffixes in order to express continuance or repetition of an action. It is modified by prefixes to express spontaneity, causation, effect, result and other aspects of the verb which are difficult to classify.

Suffixes.

adau, run away; *adau-diro*, run away often.
adiri, rub; *adiriti*, continue to rub.
orisiai, die; *ororisiti*, many to die one after the other.
adoroua, water (a plant) once; *adoruti*, water it continually.
amutia, rouse a person by one call or shake; *amotuti*, rouse one person by a lot of calling or shaking.
irimaoora, shriek; *irimaooruneado*, shriek often or continually.

Prefixes.

aberumo, strike; *araberumo*, to strike of its own accord.
oborogo, spread with hands; *oroborogo*, spread itself out once; *oroboroguti*, continue to spread itself out.
adau, run away; *owadau*, to drift (as a boat, tide and wind cause it to run away).
amedei, go into the bush; *owamedei*, take something into the bush.
arogo, speak; *emarogo*, to grumble.
urai, shut (door); *emurai*, cause door to be closed; *eremurai*, shut oneself up by closing the door.

There are only two persons in the *Kiwai* verb. The first (inclusive) indicates the speaker and his companions (I, we); the second (exclusive) indicates persons spoken to or of (thou, you, he, they). In the exclusive the distinction between thou, you, he, they, is shown only by the pronoun. The inclusive person is shown by the prefix *n-*, the exclusive by *r-* prefixed. Tenses are shown by infixes, prefixes or suffix. The number of agents is shown by suffixes, *do* dual, *mo* plural; the number of objects is shown by infixes *-ama-* dual, *-bi-* trial, and in the plural, by the substitution

of *i* for the initial vowel of the stem. The following analyses will illustrate the Kiwai verb:—

Present : *Nimo-to-go nau sori n-omidai-duru-do*, we two take one potato ;
nimo-to-go netewa nori-toribo n-imidai-ama-duru-do, we two take two
 potatoes ; *nimo-to-go netewa nau nori poto-ro n-imidai-bi-duru-do*, we two
 take three potatoes.

Past : *Nimo netewa nau-bi kabaka poto-ro tau n-imidai-bi-ru-mo*, we took three
 fowls ; *neito netewa g-imidai-ama-ru-do*, they two took two.

Future : *Nei-bi-go wi-bi-du-mo-imidai-ri netewa nau*, they three will take three ;
nimo-to ni-du-do-ogu-ri, we two will go by and by ; *nei wi-du-mo-ogu-ri*,
 they will go ; *oporigai nina-ro, ro noiri w-ogu-ri k-irobo gido*, finish this,
 then you may go fishing.

Negative : *Mo pai k-ogu-go*, I will not go ; *nei-to pai k-ogu toribo-go*, they two
 will not go.

Pronouns : *nimo*, we ; *nei*, they ; *mo*, I ; *nina*, this.

Nouns : *sori*, sweet potato ; *kakaba*, fowl.

Verbs : *omidai*, take one ; *imidai*, take more than one ; *tau*, finish ; *oporigai*,
 finish ; *irobo*, catch more than one fish (*orobai* to catch one) ; *ogu*, go.

Numerals : *nau*, one ; *netewa*, two.

Suffixes : *-ro*, one thing ; *-to*, two persons ; *-toribo*, two things ; *-do*, two agents ;
-bi, three persons ; *-poto-ro*, three things ; *-mo*, plural agents ; *-ri*, future
 time ; *-go*, emphasis.

Prefixes : *n-*, *ni-*, inclusive person ; *g-*, past time ; *w-*, *wi-*, future time ; *k-*,
 gerundive.

Infixes : *-ama-*, two objects ; *-bi*, *-ibi*, three objects ; *-duru-*, present time ;
-du-, future time ; *-ru-*, past time.

Modifying words : *noiri*, condition ; *gido*, for ; *pai*, not.

Kunini.

The verb is apparently of the same character as in Kiwai, but the examples collected as yet are very few. Rev. E. B. Riley gives the following:—

I go, <i>ane adenine</i>	We two go, <i>mine nilenige</i>
Thou goest, <i>mane adenite</i>	You two go, <i>wene ilenige</i>
He goes, <i>tabe adenige</i>	They two go, <i>tepi alenige</i>
We three go, <i>ine uzenine</i>	We go, <i>mine nalenige</i>
You three go, <i>wene uzenite</i>	You go, <i>wene nalenige</i>
They three go, <i>tepi te-uzenige</i>	They go, <i>tepi helenige</i>
I take one, <i>ane iaateni</i>	I eat one, <i>ane heruweenine</i>
I take two, <i>ane laateni</i>	I eat two, <i>ane haruweene</i>
I take three, <i>ane laataneni</i>	I eat three, <i>ane haruwanine</i>
	I eat many, <i>ane burage heruadsimine</i>

4. *Numerals.*—In many of the languages there are evidently only two numerals. More than two things are counted either by repeating or combining the words for "one" or "two," or by reference to a part of the body used as a tally. Where known the tally is named below the word given as the numeral, or when the numeral is apparently connected with the name of a part of the body that name is given below.

Table of Numerals.

Jey ...	1. nampi	2. Iaa	3. inéché-zakudéké,	4. inéché	—	—	—
Méaukô ...	1. zakod	2. inéché	zakudank	—	—	—	—
Tugérf ...	1. zakudéké	—	—	—	—	—	—
Murinda-nim ...	1. zakod, izakod	2. inah, inia	—	—	—	—	—
Bangu ...	1. nambi, niambi	2. yethombi, kethombi (kethonke, little finger)	3. yetho	4. usar	5. tambo-thoi, tambo-thui (tambin, hand)	—	—
Wondotokwe ...	6. nimbo, nim	7. —	8. —	9. —	10. —	—	—
Peremka ...	1. niambi	2. jenda	3. iedo	4. asa	5. tombodoi	—	—
Tokwasa ...	1. niambi	2. yendar	2. —	4. —	5. niambi (= 1)	—	—
...	1. nambi	2. end	3. etho	4. asa	5. tabruja	—	—
Sanata ...	1. ambie, 6. tumbi-tumbi	2. tumbi	3. lambi	4. tutumbia	5. purupuru	—	—
...	tumbi	7. —	8. —	9. —	10. warak	—	—
Potola ...	1. amburo	2. tuambio	3. nambio	4. tuambi-tuambio	5. lambia	—	—
Naria ...	1. ambiro	2. tumbi-ogota-ia-tut	3. nambi-ogona-ia-tumbi	4. sombio-sombio	5. buruburu	—	—
Numbuio ...	1. anbru	2. tumbi	3. nabi	4. ansumbisi	5. gualini	—	—
Dorro ...	1. nambini	2. rombi	3. yombi-yaboto	4. rombi-rombi	5. farbar	—	—
Nenian ...	1. ambwasa	2. sumbi-eligar	3. nambisa	4. sumbisa-sumbisa	5. wiluana-toudodja	—	—
Karigari ...	1. nambini	2. rombi	3. rombi-aboto	4. taba	5. dukop	—	—
Taujuana ...	1. ambura	2. tumbi	3. nambi	4. tsumba-tsumbi	5. widama-tanduru	—	—
...	6. wiimanu-wamen	7. tsumbi-suwamend	8. nambi-nuwaminaset	9. tsumbi-tsumbi-nuwaminaset	10. badinapu	—	—
Dungewab ...	1. ambior	2. tabi	3. lambi	4. tutumbiar	5. ambo-lond (tunda, hand)	—	—
...	1. ambio	2. tumbi	3. lambi	4. tutumbiara	5. iambia	—	—
Dopo ...	1. ambior	2. tumbi (ring finger)	3. lambi (middle finger)	4. tutubiar (index)	5. tumbi-tumbi-yambia (thumb)	—	—
Parb ...	1. ambior (little finger)	—	—	—	—	—	—
Bugi ...	1. tarungia (little finger)	2. metakina (ring finger)	3. gingi-metakina (middle finger)	4. topea (index)	5. marda (thumb)	—	—
...	6. gaben (variant)	7. trunk-krimbe (elbow)	8. poder, poderi (shoulder)	9. ngama (left breast)	10. dala (right breast)	—	—

Table of Numerals—continued.

	1. jinadobi	2. kumbia	3. kumbagin	4. kumbia-kumbogo	5. kumbiabia-kumbiabi	
Mbayaka...	...	2. kumbilo	3. kumbagi	4. kumble-kumble	5. kumbiam	—
Dibolog	2. kumurihi	3. kumtediga	4. kumkumila	5. inga	—
Agob	7. iatiku (<i>torikum, elbow</i>)	8. mata (<i>shoulder</i>)	9. nomo	10. dor (<i>dala, breast</i>)	20. tan-lukut (<i>tang, arm</i>)
Ngamai-iki	...	2. kumurihi	3. kumladaga	4. kumkumlung	5. kumibi-kumilili	—
Dabu	2. kumilibi	3. kumtediga	4. kumilibi-kumilibi	5. notoa	—
Gijara	2. nigr	3. au-udu	4. tokom	5. dirigitong	—
	...	7. knake (<i>knika, elbow</i>)	8. tupojila (<i>tupo, shoulder</i>)	9. ngum (<i>gomai, nipple</i>)	10. dalgap (<i>breast</i>)	20. unga
Jibu	2. kuraiepa	3. kuraiepa	4. kuraiepa	5. kuraiepa	—
	...	7. kwomul (<i>inner elbow</i>)	8. sodibi (<i>armpit</i>)	9. gnomi (<i>nipple</i>)	10. mia (<i>breast bone</i>)	—
Masingara	...	2. nenegi	3. nenetatu	4. nenonono	5. nenonototu	—
Kumini	2. nenegi (<i>ring finger</i>)	3. nesao (<i>middle finger</i>)	4. neneni-neneni (<i>index</i>)	5. inegube (<i>thumb</i>), ine (<i>hand</i>)	—
	...	7. ngawengawe (<i>elbow</i>)	8. abua (<i>shoulder</i>)	9. ngane (<i>breast</i>)	10. dare (<i>chest</i>)	—
Turikuri	2. netoa	3. netoa-naubi	4. netoa-netoa	—	—
Sui	2. netowa	—	—	—	—
Kwal	2. netawa	3. netowa-nau	—	—	—
Wabuda	2. netoatata, netoataterapu	3. netoa-katekon, netoa-katakopupu	4. modomodoboa, netoa-netoa	5. isego-kurodo-durumo	—
	...	7. netoatoto-piarulugo	8. isepo-ariado	9. isepiarua-durumo	10. isepokurudo-durumo	—
Hiwi	2. natogo	3. na-u	4. ipwipo (<i>ipwipa, finger</i>)	5. ikopia	—
Hibaradai	...	2. metogo	3. metogo-kayla	4. biriliri	—	—
Sisiani	2. netoa	3. netoa-nau	4. netoa-netoa	5. netoa-netoa-nau	—
Damerakaram	...	2. netoa	3. netoa-katakau	4. netoa-netoa	—	—
Dibiri	2. netoa	3. netoa-petavi	4. netoa-netoa	5. sipu	—
Boniki	7. niro (<i>many</i>)	—	—	—	—
Pirepiru	2. netoa, ato	3. netowa-petevi	4. netoa-netoa	5. sipue	—
Urama	2. netua	3. netua-gao	—	—	—

Iwainu ...	1. gao 6. —	2. netotai 7. —	3. netoa-gao 8. —	4. netotai-netoa 9. —	5. tu-ata 10. tu-netoa —
Era ...	1. kern 1. nao	2. dubua 2. netoa	3. netoa-nao 8. —	4. netoa-netoa 9. —	5. — 10. hipa
Turama ...	1. nao 6. —	2. netoa 7. —	3. netoa-nan 8. —	4. netoa-netoa 9. —	5. tu-papu 10. tu-netoa (tu, arm)
Kerewa ...	1. nao 6. —	2. netoa 7. —	3. netoa-nan 8. —	4. netoa-netoa 9. —	5. netoa-netoa 10. godo
Goudbari ...	1. nao 6. neto-ata-neto	2. netoa 7. —	3. netoa-nao 8. —	4. netoa-netoa 9. —	5. netoa-netoa 10. godo
Miriam ...	1. netat	2. netat	3. netat	4. netat	5. netat
Gaima ...	1. menagi 1. menagi	2. sakoi 2. saki	3. sarikiriwa 3. sarikiriwa	4. etanlakol 4. moiguru	5. wairabekle 5. maitiguru
Givara ...	1. menagi 1. menagi	2. sakoi 2. saki	3. sarikiriwa 3. sarikiriwa	4. etanlakol 4. moiguru	5. wairabekle 5. maitiguru
Gogodara ...	1. menagi 1. menagi	2. sakoi 2. saki	3. sarikiriwa 3. sarikiriwa	4. etanlakol 4. moiguru	5. wairabekle 5. maitiguru
Adiba ...	1. menagi 1. menagi	2. sakoi 2. saki	3. sarikiriwa 3. sarikiriwa	4. etanlakol 4. moiguru	5. wairabekle 5. maitiguru
Warima ...	1. kiriwo 6. deri	2. sakoi 2. saki	3. sarikiriwa 3. sarikiriwa	4. etanlakol 4. moiguru	5. wairabekle 5. maitiguru
Tapapi ...	1. kiriwa	2. netowara	3. sarikiriwa 3. sarikiriwa	4. etanlakol 4. moiguru	5. wairabekle 5. maitiguru
Karami ...	1. botie 6. —	2. kipalnoo 7. diri	3. kipai-ia 8. ma	4. mosokoto 9. ta-o	5. tu-poro 10. taura
Nausaku ...	1. alimapu	2. manaa	3. manaa-nimay	4. pirobia	5. pira (nepe-piro, hand)
Tagota ...	1. uradaga 6. moti-taba-nan	2. mitiga 7. moti-mabur-nan	3. nan 8. toropi-nan	4. mitiga-mitiga 9. itaba-nan	5. uradaga 10. moti-tatani
Tirio ...	1. oroka, oroga	2. mibekd, mibaga	3. mibekd, mibaga miboragi	4. mibekd-mibekd miboragi	5. mibekd-mibekd miboragi
Lake Murray ...	1. zenta 1. turusa	2. singi 2. hapua	3. hapitummo	4. ikemin (itke, under finger)	5. tememin (lame, thumb)

Table of Numerals—continued.

	1. minio	2. ai-orp	3. ai-orp-min	4. kaning	5. anko-yip (ango, thumb)
Marapka ...	6. bonmer	7. ai-orp-tok	8. bungumat (elbow)	9. iert-dereni (ert, ring-finger)	10. kandom (shoulder)
Ort-Ambip	1. minio	2. ai-orp	3. ai-orp-min	4. kanding	5. ankoyip (ango, thumb)
	4. ben-mer	7. ai-orp-tok	8. bungumat (elbow)	9. iert-dereni (ert, ring-finger)	10. kandom (shoulder)
Kandam (and Muin)	1. minio	2. ai-orp	3. ai-omin	4. kanding	5. ango (ango)
	6. ben-mer	7. ben-kapa (ben-kop)	8. (ben-derini	9. ben-kapa	10. ben-mak
Anu ...	1. minio	2. arop	3. arop-min	4. kanding (kandin, index)	5. ango (ango) (ben-ango, thumb)
	6. — (ben, arm)	7. —	8. —	9. —	10. ben-mak

V.—VOCABULARIES.

The vocabularies contain, as far as possible, the equivalents of the same words as those given in my paper on "The Languages of Northern Papua," *Journal Royal Anthropological Institute*, xlix, 1919, pp. 317-41.

1. *Vocabulary of Languages West of the Fly River.*

	1. Areca-nut.	2. Banana.	3. Bird.	4. Coconut.	5. Dog.
Märsukē ...	kanisē	wirin	usubē	ongat, misē	gōt
Togerī ...	aregat	bōme, matō, will	wozab	ongāt, mise	gōte
Murinda-nim ...	—	napit	huzub	ongat, boka	—
Toro ...	—	—	mutate	—	—
Bangu ...	kanit	vitha, baem	—	nangar	twath
Wandatokwe ...	singa	vida	terbiad	nathi	ngada
Peremka ...	porowag	vitha	iamund	nati	ngathur
Tokwasa ...	porowak	wida	emend	nangara	tuada
Sanana ...	—	nainji	armye	adj	—
Potoia ...	porowak	wiyau	yament	haj	arde
Naraia ...	porowak	nagi	yement	arsh	aga
Nombuio ...	busam	nangi	meru	arg	aha
Dorro ...	tignar	yis	meno	narg	nase
Nenium ...	porowaku	wia	amingi	ago	jam
Karigari ...	ainapuru	yisu	mumuki	nago	naai
Tanjuama ...	—	—	men	—	—
Dungerwab ...	poruwap	nanji	amunye	—	fid
Dapo ...	ba-al	nangin	aminya	haj	ardo
Parb ...	puruag	nangi	amunye	argh	ard
Bugi ...	—	agi	pa	nge	daranga
Mbayaka ...	baal	agi	pa	ne	dorunga
Dibolug ...	bulogo	agi	pa	ngi	borango
Agob ...	tiwi	wupa	pa	ngoi	dirung
Ngamsi-iki ...	baal	wupa	pa	ngoi	derung
Dabu ...	bol	uup	pa	ngoi	dorang
Gijara ...	kosala	katam	poiari	kubgn	uue
Jibu ...	bele	sela	nameja	guso	yauga
Oriomo ...	bele	sela	leic	guzu	—
Masingara ...	—	dobari	ere	ia	terego
Kunini ...	olo	dobali	ele	ia	drego

Vocabulary of Languages West of the Fly River—continued.

	6. Ear.	7. Eye.	8. Fire.	9. Fish.	10. Foot, ¹ Leg. ²
Mérauké ...	kambit	kinde	takave	pararé, parara	tubu ¹ , wabtagu ²
Tugeri ...	kambete	kinde	taukôvé	hawé	tagu
Murinda-nim ...	kambet	kind	—	—	tagu ¹ , wap ²
Toro ...	—	tauri	—	—	kahuke
Bangu ...	taroba	ti	meni	thana	kabokabo
Wandatokwe ...	taroba	si	mini	ngaraboi	wedungunga
Peremka ...	tarop	si	meni	kowea	wurthurtak, ¹ paraka ²
Tokwasa ...	tarob	si	meni	fenatha	kabkab
Sanana ...	—	—	—	—	kapakub
Potoia ...	tongan	thakup	pense	kubi	kabkab
Noraia ...	tungan	urkap	pirsh	kobi	kabakab
Nombuio ...	tongan	orup	birsh	wagiba	kobkob
Dorro ...	tangarn	sokop, sakop	bengi	wagib	karkarf, ¹ sombor ²
Nenium ...	tongan	saku	bonja	wagibu	kapkapu
Karigari ...	tunkan	sokop	bingi	wasera	karkap, ¹ siasomba ²
Tanjuamu ...	tunkano	haukapu	besb	wagipa	goorh, ¹ mankopo ²
Dungerwab ...	tungald	tarambo	penda	agwur	tsor, keb
Dapo ...	tungalo	tarambo	penda	ungua	kepekakapapu
Parb ...	tungal	taramb	pend	angur	keb-kabukah, ¹ keb ²
Bugi ...	laandra	kalye	iu	kwaliba	maka, ¹ ngianga ²
Mbayaka ...	lander	yinjapu	iu	kwaliba	yungakol
Dibolug ...	rant	yintokop	iu	gulidu	guabo, ¹ tule ²
Agob ...	lana	yikop	iu	pudi	ninga, ¹ tule ²
Ngamai-iki ...	lana	yekopo	iu	pudi	nyngkol
Dabu ...	ran	ikopkop	yu	pudi	ninghor, ¹ tule ²
Gijara ...	gubilang	ilkukup	ura	wapi	abul, ¹ wau ²
Jibu ...	yekrom	yere	para	waji	kwau
Oriomo ...	yekrom	yerkup	para	gwoz	kwau-pata, ¹ kau ²
Masingara ...	daboramu	ire'u	olo obe	ibu	erenge
Kumini ...	tabalame	ireu	uliabo	ibu, edigirua	erege-wabo, ¹ erege ²

Vocabulary of Languages West of the Fly River—continued.

	11. Hand. ¹ Arm. ²	12. House.	13. Man.	14. Moon.	15. Pig.
Merauké ...	sangga, ¹ muk-sangga ²	sava, aha	onim, amnannga	mandau	basi
Tugeri ...	senga	savā	onim	—	basi
Murinda-nim ...	sanga	oha, aha	—	—	—
Toro ...	—	—	—	—	sapi
Bungu ...	tambia	munka, boot	—	—	rongu
Wandatekwe ...	dongodi	menja	kambi	tai	erung
Peremka ...	paturr ²	mernse	karmbe	tayi	rung
Tokwasa ...	tatako	menga	ngambi	bona	rung
Sanana ...	tand	mongo	tarub	—	kimb
Potoia ...	tanta	mongo	ambro	garari	kimp
Noraiā ...	tarap	mongo	gaka	gorari	kimb
Nombuio ...	tōnda	morgo	ambriuar	horari	mamwi
Dorro ...	tondotokor ²	mongo, seki	darube	surare	menawa
Nenhum ...	tonta ²	mogwo	arg	sarari	kiamba
Karigari ...	gagadeba, ¹ tundur ²	siki	naru	serari	menoa
Tanjuama ...	purri, tonta ²	mongo	aar	hurari	—
Dungerwab ...	tenda	mongo	aar	tugiu	kimbo
Dapo ...	tunda	mongo	ambuare	tugiu	kimb
Parb ...	tond-kambul, ¹ tond ²	mongo	ar	tugiu	kimb
Bugi ...	tran-kwab, ¹ tranga-patra ²	māē	la	kak	simbel
Mbayaka ...	tang ²	mai	la	kuak	simbil
Dibolug ...	tang-pute, ¹ tang ²	mai	ra	kwiti	simbul
Agob ...	tan-kola, ¹ tang ²	ma	todivi-rabu	kuak	simal
Ngamai-iki ...	tang	ma	labo	kuaku	simbel
Dabu ...	tang-kor, ¹ tang ²	ma	raho	kwak	simar
Gijara ...	or, ¹ tang ²	muirta	dirpan-pam	malpal	kiamula
Jibu ...	yema	meta	viente, rega	mobi	woroma
Oriomo ...	iem	met	—	—	—
Masingara ...	ime	mete	binamo (pl.)	merepe	belome
Kunini ...	ime-wabo, ¹ ime ²	mete	rorie, biname (pl.)	mabie	blome

Vocabulary of Languages West of the Fly River—continued.

	16. Stone.	17. Sun.	18. Tooth.	19. Water.	20. Woman.
Mérauké ...	kataré	katonni	manggat	daka	bubti, savé
Tugeri ...	katara	—	—	daké	bubti
Marinda-nim ...	—	katane	manggat	adaka	—
Toro ...	—	—	badzi	—	—
Bangu ...	tan	epotha	ter	taukwar	—
Wandatokwe ...	wermer	eboda	ter	nou	ngari
Peremka ...	verma	erpathur	turr	noor	ngari
Tukwasa ...	guem	eboda	ter	tokwa	ngari
Sanana ...	—	kongo	ohi	no	mariaje
Potoia ...	guuni	iibuada	ten	nou	minyua tita- map
Noraia ...	tónda	ebo	ten	nu	amap
Nambuio ...	ntónda	epoho	tuon	nu	dumabe
Dorro ...	gogou	kesaro-kop	run	nu	namav
Nenium ...	tonga	keja	son	nu	damabu
Karigari ...	yigar	kesari-kopo	runo	nu	numabu
Tanjuama ...	gunja	ebwoho	tsuna	no	domabi
Dungerwab ...	tunda	abiad, abwiar	tól	nōu	mōeg
Dapo ...	tundara	abiada	taal	nou	temab
Parb ...	—	abiard	tol	nou	temarb
Bugi ...	dader	yabada	lengé	ngr	mala
Mbayuka ...	dader	yaboda	lenga	ni	mala
Dibolug ...	wagudi	iebodo	lingu	abu	mulema
Agob ...	taimir	labada	ngoi	ini	topodivi- mala
Ngamai-iki ...	dader	yaboda	noi	yine	mala
Dabu ...	dadar	iabada	nguwoi	ine	mará
Gijara ...	ingilgup	abwiohir	jirgup	nai	dirpan-kol
Jibu ...	yepahabo	loma	or-kak	nia	konga
Oriomo ...	—	—	—	—	—
Masingara ...	tedere	abesi	kiru'u	nle	magebi
Kmimi ...	kula	himu	griu	nle	magebi, oga

2. *Vocabulary of Languages of the Fly Delta.*

	1. Areca-nut.	2. Banana.	3. Bird.	4. Coconut.	5. Dog.
Mawata ...	—	dubari	wowogo	oi	umu
Perem ...	—	obira	—	—	—
Turituri ...	gore	dubari	wowogo	o'i	umu
Sui ...	—	sime	wowogo	oi	so
Kiwai ...	gore	sime	wowogo	o'i	sio
Domori ...	gore	sime	wowogo	sabu	so
Waboda ...	gore	kobia	wowogo	ebu	wiko, viko
Hiwi ...	gore	obira	ipoipo	sabu	erka
Hibaradai ...	gore	niwaina	ola	sabu	gaha
Sisiami ...	tao	kobira	ipoipo	gota	soka
Damerakaram	—	—	—	—	—
Dibiri ...	—	—	siwi	—	—
Buniki ...	pakari, kurua	kobira	siwi	pagi	soka
Pirapiru ...	pakari	kobira	sivi	pagi	soka
Urana ...	—	—	hawia	—	—
Iwainu ...	goe	dubai	nawa	goata	umu
Era R. ...	—	—	imuhu	—	—
Turamu ...	—	—	wobogo	—	—
Kerewa ...	goi, goe	dubai	papagama	gota, goata	kaukau
Goaribari ...	—	woi, dubai	pagama, wagama	gauta	kaukau
Miriam ...	—	kaba	ebur	u	omai
Gaima ...	—	dubari	puede	bou	soke
Girara ...	ema	dubari	paide	bou	suke
Gogodara ...	ema	dubari	puede, puidi	bou	soke
Adiba ...	ema	dubari	puida	bou	soke
Waruna ...	wasalca	gwasi	sora	bukuta	soke
Tapapi ...	ernua	ubira	epchuo	apu	tai-ia
Karami ...	—	imara	kaimo	—	kao (? kao)

Vocabulary of Languages of the Fly Delta—continued.

	6. Eat.	7. Eye.	8. Fire.	9. Fish.	10. Foot. ¹ Leg. ¹
Mawata ...	hepate, gare	damari	era	arimina	hairo-pata, ¹ hairo ²
Perem ...	—	—	—	—	—
Turituri ...	hepate	damari	era	arimina	hairo
Sui ...	epato	idamari	era	arimina	airo
Kiwai ...	sepate, gare	damari	era	irisina, arimina	sairo
Domori ...	hepate	damari	nre	irohona	hairo
Wabuda ...	sepate	damari	kera	giro	sakiro
Hiwi ...	epate	edapapu	era	namo	agoa-pata, ¹ agawa ²
Hibaradai ...	gare	baridi	era	namo	pata, nato
Sisiami ...	gare	edamari	erā	nakere	sairo-pata, sairo
Damerakaram	—	—	—	—	—
Dibiri ...	gare	damari	maphi	obo-giro	sairu-mau, uru-meri
Buniki...	gare	damari	mafi	na	sairo-pata, ¹ sairo ²
Pirupiru ...	gare	damari	mafi	na	sairo-pata, ¹ sairo ²
Urama...	hepatu	indomai	moko	ulo	kaikini, waipu
Iwainu...	hepato	domai	muko	na	tabe, emu
Era R....	hepato	idomai	mukoa	gaiha	kakaihini, waipu, emo
Turamu ...	hepati	idomari	era	naa	pata, waga, emo
Kerewa ...	hepato	domai	kupo	na	kono, kono- pata, wai ²
Goaribari ..	hepato	damai, indomai	era, kupo	naa	koatan, kwano, emo, wai
Miriam ...	laip, gerip	pone, irkep	ur	lar	teter
Gaina ...	igibi	tao	ira	mauka	eguana, ¹ ei ²
Girara ...	gibi	tau	ila	muka	aidabu, ¹ ai ²
Gogodara	igibi	tao	ira	mewa, mauka	ei-guana, ei
Adiba ...	waki, igibi	tauo	ira	mowa	eguana, ei, kaka
Waruna ...	wagi	tao	awa	mauka	eiaba, ai
Tapapi ...	nabu	kikipo	koer	daha	natutama, agua
Karami...	kuse	epega	mavio	mini	mea, anni

Vocabulary of Languages of the Fly Delta—continued.

	11. Hand, ¹ Arm. ²	12. House.	13. Man.	14. Moon.	15. Pig.
Mawata ...	tupata, ¹ tu ²	moto, darimo	auana, aruhi	ganume	boromo
Perem ...	—	—	—	—	—
Turituri ...	tu	moto	dubu, hawana	ganumi	boromo, luwade
Sui ...	tu	moto	didiri	sagana	boromo
Kiwai ...	tu-pata, ¹ tu ²	moto	dubu	sagana	suwade, boromo
Domori ...	tu	moto	dubu	owe	suade, boromo
Wabada ...	tuwo, ¹ tu ²	moto	dubu	sogomi	suwade, boromo
Hiwi ...	la-pata, ¹ la ²	môto	urirabi	sogomi	wader
Hibaradai ...	koto-pata, ¹ koto ²	môto	dubu	matumi	goia
Sisiami ...	tu-pata, ¹ tu ²	moto	dubu	kagoi	giro
Damerakaram ...	—	môtô	—	—	—
Dibiri ...	agagi, ¹ tu ²	môtu	dubu	sogomi	—
Buniki ...	tu-da, ¹ tu ²	moto	dubu	sogomi	giro
Pirupiru ...	tu ²	moto	dubu	sogomi	giro
Urama ...	kikini, ¹ tu ²	moto	dubu	ove	—
Iwainu ...	tu, ¹ tu ²	mene, moto	dubu	ove	bomo
Era R. ...	hodo, gogo, tu	mene, moto	maimi	ove	—
Turama ...	to-pata, bena, tu	moto, daimu	dubu	bala	—
Kerewa ...	tu, tu	moto, daimu	dubu	ove, bara	bomo
Goaribari ...	tu, adiri, tu- bari, dabau, adii, bena, tu	motu, darim, daimu	dubu	bala	boromo, naupaiui
Miriam ...	tag	meta	le, kimjar	meh	borom
Gaima ...	mai ²	genamo	daragi	samoso	wôe
Girara ...	kuetakueta, ¹ mai ²	genama	daragi	samoso	wuô
Gogodara ...	mai	genamo	daragi	samoso	wôï
Adiba ...	kuetakueta maï	genama	daragi	samoso	wôï
Waruna ...	mai	mono	daragi	bedoa	aukaka
Tapapi ...	wi, okope	ginama	iobo	geger	guer
Karami ...	simaia, sibu	ogota	sor	kuwiri	giromoi

Vocabulary of Languages of the Fly Delta—continued.

	16. Stone.	17. Sun.	18. Tooth.	19. Water.	20. Woman.
Mawata ...	nora api	iwio	Ibuanara	obo	orobo, upi
Perem ...	—	wio	iawa	—	—
Turi turi ...	noora	opia, hiuro	ibunoro	obo	ubi, orobo
Sui ...	nora	sai	iawa	obo	upi
Kiwai ...	kuraere	sai	iawa	obo	upi
Domori ...	medaopi	hahi	iawa	obo	orobo
Wabuda ...	nokorokopi	sai, sariki	ihu poka	kobo	upi, woobpu
Hiwi ...	nokora	hegera	ibo	obo	orobo
Hibaradai ...	nokora	hegera	lalo	obo	kamiara
Sisiami ...	keatoma	saiki	ibenoro	obo	mamu, orobo
Damerakaram	—	—	—	—	—
Dibiri ...	nokora	sai-i-ki	ibunoro	obo	mamio, basere
Buniki ...	nokora	saiki	ibunoro	obo	mamie
Pirupiru ...	nokora	saiki-ŋpu	ibonuru	obo	mamie
Urama ...	nooa	hivio	giri	obo	upi
Iwainu ...	noa	hivio	giri	obo	upi
Era R. ...	nooa	—	ibone	obo	arola
Turama ...	akabu	—	ibonora	obo	upi
Kerewa ...	kabu, akabu	ihio, hivio	iowa	obo	upi
Goaribari ...	akabu	hivio	iowa	obo	upi
Mirian, ...	baker	lem	tereg	ni	kosker
Gaima ...	bakere	kadepa	pose	wi	ato, susagi
Girara ...	me	kadepa	pōso	—	busi
Gogodara ...	gewa, bekere	darigi	poso	vi	susage, ato
Adiha ...	gewa	kadepa	poso	vi	susagi
Waruna ...	igoso	kadepa	poso	ogo	atugi
Tapapi ...	—	daigi	lalo	bea	kamena
Karami ...	agabu	ainea	saku	auwo	kipa

3. Vocabulary of Languages of the Fly Basin.

	1. Areca-nut.	2. Banana.	3. Bird.	4. Coconut.	5. Dog.
Nansaku ...	niwesa	njnananu	mimku	puka	gang
Soki ...	—	—	—	—	—
Tagota ...	—	ioa	parosi	—	—
Pisirami ...	—	—	—	pio	—
Turio ...	gore	sime	isupi	rabu, mutira	seae
Village Y ...	—	napit	—	buka	wu
Village Z ...	—	napete	—	wangata	—
Lake Murray ...	—	napit, napeka	fiafi	wongat, boka	—
Amnat ...	—	dema	aru	tiobe	bisane
Marapka ...	kamban	yium	on	atom	anon
Ort-Ambip ...	—	yium	bip	atom	an
Kandam ...	—	yium	ong	atom	anong
Ana ...	—	yium	on	atom	anon
Muis ...	birot	nium	ong	atom	anong

Vocabulary of Languages of the Fly Basin—continued.

	6. Ear.	7. Eye.	8. Fire.	9. Fish.	10. Foot, Leg. ²
Nausaku ...	iakadu	yitumk	arako	pegusa	pepma, papero
Soki ...	—	iutumku	—	—	—
Tagota... ..	tuap	pari	jau	—	nati
Pisirami ...	suapi	paridi	—	—	nati
Tirio ...	bamata	haridi	suze, kure	kepoma, kaboma	atora, adara
Village Y ...	gia	wi	ginam	seva	jenda, ¹ kamba ²
Village Z ...	hia	boi	—	—	zenda, kambagi
Lake Murray ...	kumbit	boi	—	—	zinda, kambag
Amnat... ..	karoke	keronge	de	bune	tède, karike
Marapka ...	genot	indop	amot	on	iondat, ¹ ion ²
Ort-Ambip ...	genot	indop	amot	on	iondat, ion
Kandam ...	genikot	tinop	amot	ton	ionbatak, ion
Anu ...	gende	kornypop	amor	on	kondor- tapuru, ¹
Muis ...	genikot	tinop	amot	on	kondor ² jongkun, ok- membon

	11. Hand, ¹ Arm. ²	12. House.	13. Man.	14. Moon.	15. Pig.
Nausaku ...	nepépero, magudi	gagu	daru	tai-i	kwainu
Soki ...	—	—	—	—	—
Tagota... ..	—	darimo	—	mano	minao
Pisirami ...	natin, pouna	—	—	—	minau
Tirio ...	tikiri, tigiri ²	turie, dari	amiami, ane	korame, goreame	sepera, sebera
Village Y ...	jenda, ¹ him ²	vin	—	esuko (?)	pasi
Village Z ...	zenda, gu	fa	—	—	—
Lake Murray ...	jenda, bimbi	koi-iba, fa	—	—	—
Amnat... ..	sinanor (?), ¹ keride ²	awe, turusa	wike	duarine	mine
Marapka ...	dingidat, ¹ dingi ²	ambip, mino	karuk	wôt	awon
Ort-Ambip ...	nendongdat, nendong	ambip, mimo	karuk	wôt	awon
Kandam ...	ortabatak, tini	tarap	katuk	wat	awon
Anu ...	ben ²	—	katuk	wat	awon
Muis ...	orta, tini	ambip	katuk	wât	awon

Vocabulary of Languages of the Fly Basin—continued.

	16. Stone.	17. Sun.	18. Tooth.	19. Water.	20. Woman.
Nausaku ...	tirikia	kiorara	tamki	nia	atu
Soki ...	—	kisari	tamki	nia-kuma	—
Tagota... ..	tamaga	dari	kam	mauka	moream
Pisirami ...	—	dari	kam	mauka	morfem
Tirio ...	kuma, guma	uainea, kareme	sū	opa, oba	kinasu, kiwazu
Village Y ...	kum	kowa	se	auk	—
Village Z ...	—	kaia	kana	nia	—
Lake Murray ...	—	kaia	kama	nla	—
Amnat... ..	ige	te	pede	waidingkete	ara
Marapka ...	bot	aron	ningambo	ok	wunung
Ort-Ambip ...	bot	kamkok	ningambo	ok	engem
Kandam ...	bot	atong	ningambó	ok	wunung
Amu ...	bot	atong	nijkondó	ok	nimitana
Muin ...	bot	atong	ningambor	ok	kern

VI.—NOTES ON THE VOCABULARIES.

1. The vocabularies and specimens given in this paper show fourteen groups of languages in the Western Division of Papua. Except in two cases these have little or no relation to each other.

2. The languages of the Masingara group (Jibu, Masingara, and Kunini) show a considerable amount of agreement with the Miriam of Eastern Torres Straits, and less agreement with the essentially Australian language of Western Torres Straits.

Ant : K. *sonic*, M. *soni*.

Armpit : K. *kerari*, M. *kenani*.

Bead : K. *kusa*, M. *kusu*, Mb. *kusa*.

Belly : J. *komu*, K. *amuge*, M. *kem*.

Belt : K. *bagi*, M. *wak*.

Bottle : K. *karpu*, M. *tarpor*.

Bow : Mg. *gagari*, K. *gagare*, Mb. *gagai*.

Breast : K. *ngame*, M. *nem*.

Canoe : K. *po*, M. *pao*.

Club : K. *gabagaba*, M. Mb. *gabagaba*.

Cold : K. *gabu*, M. *geb*, Mb. *gabu*.

Come : K. *aie*, Mb. *aie*.

Cuscus : K. *bate*, M. *barit*, Mb. *bait*.

Dance : J. *geru*, M. *ginar*, Mb. *girer*.

Face : J. *wopo*, K. *opo*, M. *op*.

Fat, grease : K. *tore*, M. *toertoer*.

Father : K. *baba*, M. Mb. *baba*.

Fire : K. *muie*, Mb. *mui*.

Flesh : Mg. *madu*, K. *mazu*, M. *med*, Mb. *madu*.

Fowl : K. *karakara*, M. *kalkal*, Mb. *kala-kala*.

Hair : K. *edi*, M. *ed*.

Heavy : K. *mepu*, Mb. *mapul*.

House : J. *meta*, Mg. K. *mete*, M. *meta*, Mb. *mud*.

Know : K. *umelc*, M. *umele*.

Laugh : J. *nonge*, K. *ngange*, M. *neg*.

Leaf : Mg. <i>K. lame</i> , M. <i>lam</i> .	Smell : K. <i>lenge</i> , M. <i>lag</i> .
Leg : Mg. <i>erenge</i> , K. <i>ernge</i> , Mb. <i>ngar</i> .	Spittle : Mg. <i>K. mote</i> , M. Mb. <i>mos</i> .
Louse : J. <i>bō-nōm</i> (<i>bue</i> big), K. <i>ngame</i> , M. <i>nem</i> .	Star : K. <i>wale</i> , M. <i>wer</i> .
Mat : (coco leaf) K. <i>waku</i> , M. <i>wakoi</i> , Mb. <i>waku</i> .	Steal : J. <i>yoram</i> , M. <i>eruam</i> .
Megapod : K. <i>surkar</i> , M. Mb. <i>surka</i> .	Stone : K. <i>kula</i> , Mb. <i>kula</i> .
Moon : J. <i>mobi</i> , Mg. <i>merepe</i> , K. <i>mabie</i> , M. <i>meh</i> .	Sugar cane : J. <i>groba</i> , K. <i>galue</i> , M. <i>neru</i> , Mb. <i>geru</i> .
Navel : J. <i>kuōporo</i> , Mg. <i>obolo</i> , K. <i>opolo</i> , M. <i>kupor</i> , Mb. <i>kupar</i> .	Sun : J. <i>loma</i> , M. <i>lem</i> .
Outrigger-float : K. <i>arima</i> , Mb. <i>sarima</i> .	Sweat : K. <i>malage</i> , M. <i>mereg</i> , Mb. <i>murug</i> .
Pearlshell : K. <i>mobe</i> , M. <i>maib</i> .	Sweet : K. <i>mile</i> , Mb. <i>mital</i> .
Pig : J. <i>woroma</i> , Mg. <i>boloma</i> , K. <i>blome</i> , M. <i>borom</i> , Mb. <i>burum</i> .	Taro : K. <i>gube</i> .
Rain : Mg. K. <i>ngupe</i> , M. <i>gub</i> waterspout, Mb. <i>gub</i> wind.	Thin : K. <i>paple</i> , Mb. <i>pepe</i> .
Road : Mg. K. <i>gabe</i> , M. <i>gab</i> .	Tobacco : J. <i>sakup</i> , K. <i>sukuba</i> , M. <i>sokop</i> , Mb. <i>sukuba</i> .
Salt : K. <i>malu</i> , Mb. <i>malu</i> sea.	Tomahawk : J. <i>turika</i> , M. <i>turik</i> .
Shark : Mg. <i>bedame</i> , K. <i>bedam</i> , M. <i>baidam</i> , Mb. <i>beizam</i> .	Tongue : J. <i>eratu</i> , K. <i>wata</i> , M. <i>werat</i> .
Sleep : K. <i>ute</i> , M. <i>ut</i> , Mb. <i>utui</i> .	Turtle : K. <i>game</i> , M. <i>nam</i> .
	Turtle shell : K. <i>karara game</i> , M. <i>karar</i> .
	Vomit : K. <i>megi</i> , M. <i>megi</i> .
	Water : J. <i>nia</i> , K. <i>nie</i> , M. <i>ni</i> .
	Yam : K. <i>luie</i> , M. <i>lewer</i> .

J. = Jibu, Mg. = Masingara, K. = Kunini, M. = Miriam, Mb. = Mabuiag.

3. The languages of the Middle Fly region near Lake Murray and the nameless villages Z and Y show agreements with the Mëraukë on the western border of the division.

Banana : L. <i>napit</i> , Z. <i>napete</i> , Y. <i>napit</i> , M. <i>napit</i> .	Lip : Y. <i>to</i> , M. <i>utup</i> .
Belt : L.Z. <i>gusigusi</i> , M. <i>agus</i> .	Mosquito : Y. <i>nangat</i> , M. <i>nangit</i> .
Coconut : L. <i>wongat</i> , Z. <i>wangata</i> , Y. <i>buka</i> , M. <i>onggat</i> .	Mouth : Y. <i>mangana</i> , M. <i>manggat</i> tooth.
Ear : L. <i>kumbit</i> , M. <i>kambit</i> .	Navel : L. <i>dukumi</i> , Z. <i>lukumi</i> , Y. <i>lukum</i> , M. <i>dakumē</i> .
Hair : L. <i>gi</i> : Vine plaited in hair L.Z. <i>ki-zam</i> , Y. <i>gi-zam</i> , M. <i>samē</i> plait of hair hanging from back.	Paddle : L.Z. <i>kavia</i> , Y. <i>kavi</i> , M. <i>kavia</i>
House : L.Z. <i>fa</i> , M. <i>aha</i> , <i>sava</i> .	Pig : Y. <i>pasi</i> , M. <i>basi</i> .
	Shoulder : Y. <i>ganga</i> , M. <i>gāgārē</i> .
	Spittle : Y. <i>kussi</i> , M. <i>kase</i> .
	Water : Y. <i>auk</i> , M. <i>doka</i> .

L. = Lake Murray, Z. = Village Z, Y. = Village Y, M. = Mëraukë.

4. There are very few agreements between the Upper Fly languages and those over the border in Northern Papua. The following, however, may be noted :—

Belly : Amnat *kure*, Hatzfeldt Hafen *guram*.

Tree : Ort-Ambip, Marapka, Kandam *at*, Monumbo *at*.

Anu *ap*, Szeak *eib*.

House : Ort-Ambip, Anu *ambip*, Szeak *ab*, Bilibili *amb*. (The two last are Melanesian.)

Tobacco : Ort-Ambip, Marapka *aup*, Hatzfeldt Hafen *yab*.

Water : Marapka, Ort-Ambip, Kandam, Anu *ok*, Hatzfeldt Hafen *ak*.

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THE PAIRAMA CEREMONY IN THE PURARI DELTA, PAPUA.

[WITH PLATE XXI.]

By F. E. WILLIAMS, Assistant Government Anthropologist, Territory of Papua.

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INTRODUCTORY.

THE *ravi*, or men's house, in the Purari Delta is a long building which tapers from a lofty and spacious entrance down to a low, narrow compartment at the rear. Along either side of the interior are ranged series of open alcoves called *larava*. Passing these one will come to a palm-leaf barrier which shuts off the last 30 or 40 feet of the building. This rear compartment is called the *ravi-oru*.

It is a secret place, always dark and quiet, and never entered save by a few who are ceremonially qualified. Within it one may see—not without difficulty—a crowded assemblage of wicker-built monsters, four-legged creatures, standing 5 or 6 feet high, with bright eyes and huge cavernous mouths. These are the *kaiemunu*; they resemble nothing save, perhaps, somewhat clumsy-looking dragons. (Fig. 2 and Pl. XXI.)

They are to be found in every main *ravi* of the Purari Delta (except in a few villages where the cult of them has been abandoned). Among the little-known Ipiko people of the R. Kapaina the same queer creature was seen, hidden away in one of their *ravis*. And it is said that they likewise exist in the Kipaia group

of villages on the Era R., though this is a native account for which I have no verification.

There are indications that the *kaiemunu* and the ceremony associated with them are innate features in the culture of the present Purari Delta people. There is nothing resembling them among the neighbouring people on the east, viz., the Elema of the Gulf Division; and, as far as my knowledge goes, nothing of the kind among the Urama or Goaribi on the west.

It is the purpose of the present paper to describe especially the ceremony called "*Pairama*."¹ This ceremony is in essence the ritual destruction and re-creation of the *kaiemunu*, but it involves many other features, in particular the seclusion of young boys, of which the actual ceremony may be regarded as a culmination. It was my good fortune to be present in Ukiravi, the most important village group of the Koriki tribe, when two *ravis*, Akia and Mira, were celebrating the *Pairama*. It was therefore possible to follow the ceremony closely through its successive stages. Before proceeding, however, to describe these stages as they were actually performed and seen, it will be necessary to give some account of the nature and attributes of the *kaiemunu*, so as to make the ceremony more intelligible.

THE CONCEPT "IMUNU."

The word, which is pronounced *kaiemunu*, would appear to be a compound of *kaia* and *imunu*. The word *kaia* in the Purari language is simple enough; it means literally sky, or else "thunder." The second part of the compound, however, is not to be dismissed so easily.

Imunu is one of those very wide and indistinct categories whose emotional implications are clearer than the intellectual. The word is applied to many of the religious and ceremonial objects of the Purari, such as (besides the *kaiemunu*):—

- (1) *Aiaimunu* (possibly "drum-*imunu*"), i.e. the masks commonly called by the white man *Kaiva Kuku*. These are also called *irimunu*, or *imunu* of the bush (*iri*).
- (2) *Upura imunu*, the bull-roarer; also called *imunu-viki*, the weeping *imunu*.
- (3) *Ru imunu*, the figure of palm-spathe (*ru*) used as a defensive charm.

So also many other things, hunting charms, old relics, grotesque carvings, freaks of nature, etc., are commonly said to be *imunu*.

But such a list does not by any means exhaust the *imunu* class. It appears that an exceptionally large tree might be thought to be the home of an *imunu*. Similarly the vast rivers of the Delta are in some way frequented by many *imunu*. But I cannot say I have ever heard of an *imunu* as wholly immaterial: there has always been some material object with which it is identified. Thus, if a snake were

¹ I am informed by Mr. R. A. Woodward, Acting Resident Magistrate, Delta Div., that *Pairama* is the name of the R. Purari below the Kairu effluence.

seen crawling by the tree, a man would say, "Ah, there goes the *imunu*," and, as far as I know, the *imunu* of the rivers are none other than the *kaiemunu* which stand in the *ravi-oru*, and are invariably associated with certain of the principal Delta rivers.

Nor can it be said that the real *imunu* is something immaterial, and the concrete object merely an earthly tenement for it. It would, indeed, be nearer the mark in most cases to say that the concrete object is essentially *imunu* in itself, but that it has an "*a'avaia*"—soul, spirit, shadow, or immaterial replica, however it be called—which can leave the body just as a man's *a'avaia* can leave his body in dreams. Thus it is said that the *kaiemunu* accompanies the hunt; not, indeed, the real *kaiemunu*, which might be thought of as running like a pig or swimming like a crocodile—that would be absurd—but the *a'avaia* of the *kaiemunu*.

The only fair and satisfactory way of dealing with the *imunu* concept would be to enumerate all the applications of the word; but this is too long a business to attempt here. For short, it seems better to regard the term in its wider application as adjectival rather than substantive; it stands for a quality, or complex of qualities, rather than a thing. If asked "What is an *imunu*?" a native informant is, of course, completely nonplussed, but, pointing to this and that—and a perplexingly varied assortment of things they may be—he will say "This is *imunu*."

Such objects are queer or mysterious or secret; they are holy in the sense that they are unapproachable or untouchable; they have some kind of potency for good or evil; they are treasured with the utmost care; age seems to add to the mana of them. It was suggested that the emotional aspect of the attitude toward *imunu* was the safest to go by. Anything which a native dreads for the harm it may do him, and fears because of its strangeness, and cajoles for its favours, and fondly treasures for its old associations, he will tell you is *imunu*.

THE KAIEMUNU.

As was said previously, the word *kaiu* in the Purari tongue means sky or else thunder. No native, however, is sufficient of a philologist to divide a word like *kaiemunu* into its components; he is only amused or impatient with the fool who tries. Furthermore, it must be confessed that in the cult of the *kaiemunu* neither the sky in general, nor the thunder in particular, appears to play any very important part. It should be mentioned, however, that Iri and Kai, who are said to have made the first *kaiemunu* (vide p. 364), were declared by some witnesses to have come from the sky (though by others to have come out of the ground). Further, there is the possibly significant expression "*Kai, Kauri-nu-paka*"—"Kai, the daughter of Kauri," which an informant may use very glibly and without much idea of its meaning. To him Kauri is the name of a man; but it may be worth noting that Kauri in the Toaripi language (a dialect of Elema) means sky.

There is, moreover, a hazy belief that the thunder is the voice of the *kaiemunu*; there is a mysterious feature—a sort of black forehead-band—worn by the *kaiemunu* of the Koriki, and called metaphorically the “thunder cloud”; and I have heard a legend of two *kaiemunu* descending (in human form) from the sky during a thunder-storm in which a number of men who had offended them were killed. Apart from a few such hints as these, the cult of the *kaiemunu* has little or nothing to do with either sky or thunder.

On the other hand, it is intimately concerned with the Delta rivers. Each *kaiemunu* is definitely regarded as associated with a particular river. This is its haunt more than its habitat. Closely connected with each *kaiemunu* there is an individual of a certain species (usually fish, sometimes crocodile, rarely pig or snake). This fish, which is a giant among its kind—very ancient, and immortal or indestructible—is the *imunu-vii*, or “canoe of the *imunu*”; it will transport the *a'avia* of the *kaiemunu* hither and thither. There is in theory no limit to the peregrinations of the *imunu-vii*, though it is said to inhabit especially one river or another.

Now each *kaiemunu* in a *ravi* belongs to one particular *larava* or alcove, i.e. to the small patrilineal group (also called *larava*) to which this alcove especially belongs. This group observes a food tabu of the species to which its *imunu-vii* belongs, and professes that it would refrain from killing any member of that species. The *imunu-vii* itself would certainly be spared by a hunter or fisherman; indeed, it would be of no use to attack it.

There is more than one account of the origin of the *kaiemunu*. Among the Koriki tribe the usual version is that the first of them was constructed as a house by the progenitors of the people, viz., Iri and Kai,¹ literally the Tree and the Earth, but always thought of as man and woman (sometimes called son and mother respectively, sometimes brother and sister). But another story tells how an ancestor, immigrant from the Iari tribe on the east, did not die but became transformed into the first *kaiemunu*.

Whatever may have been its origin, the *kaiemunu* is now regarded as a definitely personal being. Each bears its personal name, to which may be attached that of its “father,” as e.g. Aua Kaipu-nu-mere, Koivi Pirika-nu-mere, etc., or simply Aua Kaipu—“Aua, son of Kaipu.” It is greatly feared and venerated; no one but certain old chiefs would dare to touch it as it stands in the *ravi-oru*. It is continually placated with food offerings, which are sometimes placed close to the screen at the rear of the *ravi*, while the donor cries in loud chanting tones on the name of his

¹ It was tempting to fall back on this Kai for the derivation of the word *kaiemunu*. One more than usually ingenious informant did invent (I believe) such a connection for my special benefit. The word, however, is *kai*, not *kai*, in the compound. It may be significant that in the language of Orokelo, on the east, the word *kai* means sky.

Scheme of Akia Ravi.

KALARAVI KARI. "Koivi." An <i>Aii</i> (R. Pie). Omaro Baieke. (Father's <i>larava</i> .)	ORU-Ō. "Kave." A <i>Komara</i> (R. Baroi). Maikai Baii. (Apono's <i>larava</i>). & Pirika Oipu. (Apono's <i>larava</i> .)
UKUNUKUA BAVAKE. "Ado." A <i>Ke'ere</i> (R. Purari). Omaro Baii. (Apono's <i>larava</i> .)	BAPUNAIRU. "Iomu" (a spear). A <i>Paikuru</i> (R. Aivei). Baia Omaro. (Father's <i>larava</i> .)
MARI KARI. "Omaro." ? (R. Purari). Perire Kaika. ()	ORU-KIKI. "Iau." An <i>Aii</i> (R. Baroi). Karara Ove. (Apono's <i>larava</i> .)
UKIRAVI MAKO. "Aka." A <i>Paikuru</i> (R. Urika). Perire Kaika (Father's <i>larava</i> .)	AIRAVI. "Dopo." An <i>Aina</i> (R. Aivei). Kauri Ako. (Father's <i>larava</i> .)
KAIRU KARI. "Biri." An <i>Aii</i> (R. Kumarea). Omaro Baieke. (Apono's <i>larava</i> .)	ORU-Ō. "Baii." (This <i>larava</i> has no wicker <i>kaiemunu</i> at present.)

<i>Explanation.</i>	<i>See above.</i>
1. Name of <i>larava</i>	KALARAVI KARI.
2. Name of <i>kaiemunu</i>	"Koivi."
3. The species tabued to the <i>larava</i> , of which one member is <i>imunu-rū</i> to the <i>kaiemunu</i>	<i>Aii</i> (shark).
4. The river with which <i>larava</i> , <i>kaiemunu</i> , and <i>imunu-rū</i> are especially associated	R. Pie.
5. <i>Pairama</i> boy associated with the <i>larava</i> during seclusion, and acting as the destroyer of the <i>kaiemunu</i>	Omaro Baieke.
6. In some cases this is his apono's <i>larava</i> , in others it is his father's.	

kaiemunu, and announces that he has brought this gift of food.¹ It is believed to control the success of the hunt and the health of the people. A man will consult the *kaiemunu* in behalf of a sick relative, and the latter may be told that his illness is due to the anger of an offended *kaiemunu*, which must be averted or bought off with the offering of a pig.

As will be seen in the ensuing description, the *kaiemunu* may at times be treated with extraordinary familiarity; but for the long period in which it remains concealed and decaying in the *ravi-oru*, no more sacred object is known to the Purari people. It is the very heart and the great secret of their religious life.

THE PAIRAMA A RECURRENT CEREMONY.

The *Pairama* is a recurrent ceremony. In one *ravi* the *kaiemunu* may be brand-new, bristling with tufts of cane, with bright red eyes formed of coloured seeds, befeathered, and still bearing their sprigs of dry croton. In another they are decrepit and mouldy, collapsing into strange awkward postures. These have stood perhaps five years or more in the dank interior of the *ravi-oru*. Here the thatching is not kept in repair; the floor planks are perilously rotten, with an indescribable morass some 8 feet or so beneath them; the rain drips down on the old figures, and worms and borers are for ever preying on their constitution.

As a matter of course, the *kaiemunu* will be renewed—destroyed and re-created—when they have reached a very advanced stage of dilapidation. But there is nothing like regularity in the recurrence of the ceremony: Some *ravis* are energetic; others are too indolent for all the trouble of a *Pairama*. But these latter will pay the penalty of their neglect. It was said that the *ravis* which did not keep their *kaiemunu* in a condition of perpetual youth and vigour would be preyed upon by those who did: their men would be for ever falling victims to cannibal raiders from other villages.

It has been pointed out that the *kaiemunu* control the success of the hunt, and, as will be seen, measures are taken during the ceremony to invigorate them. It is thought a good thing to hold *Pairama* frequently, and to remake the *kaiemunu*. The idea, it seems, is that a young strong *kaiemunu* will better guard the interests of its people than one which is old and decrepit.²

Furthermore, in the face of some portent or calamity the *ravi* might think it desirable to celebrate *Pairama*. This, in fact, is apparently regarded as a means of conciliating the *kaiemunu*: they must be destroyed and remade. Thus it was

¹ These offerings are afterwards consumed by the men of the *ravi*, or probably in particular by the *larava* of the donor.

² I have not heard any witness affirm this definitely, however.

said that a violent thunderstorm over the village might be interpreted as the voice of the *kaitemunu* themselves demanding a *Pairama*.¹

CEREMONIAL CHIEFS.

The authority for *Pairama*, or the decision to hold the ceremony, nominally pertains to the two *ravi amua* (chiefs of the right and left of the *ravi*), in consultation with the *paidi amua* (general chief of *ravi* and village). The functions of the *ravi amua* are in the main ceremonial; only they and a few associates would be entitled to or would dare to enter the *ravi-oru*, and therefore it is likely that they really do authorize the ceremony to some extent, though in the Purari Delta it cannot be said that the *amua* issues commands and is obeyed. There is very little of the pomp and formality of chieftainship, and one may venture to say that all the "orders" of an *amua* are in safe accordance with public opinion in the *ravi*. In the conduct of a ceremony differences of opinion are frequent enough—especially as to the necessity of hurrying or delaying—and any man will express his views without hesitation.

While a number of men are sitting in a *ravi*, placidly chewing and smoking, one may suddenly raise his voice and pour forth a torrent of abusive eloquence, his eyes fairly glaring with anger, and his speech punctuated with snorts and groans of disgust. Meanwhile his audience pay not the slightest heed to him; the speaker ends with the same almost startling suddenness with which he began, and husks himself another betel-nut.

Although, however, the *ravi-amua* do not in any sense give commands, they are nevertheless the masters of ceremonies and the administrators of the ritual. Indeed, it is not necessary that they should dictate what is to be done: the stages of a ceremony follow one another in the conventional manner, and the main subject of contention, when it arises, is regarding the delays between these stages.

Thus in any one *ravi* the *ravi-amua* will be in some degree responsible for the conduct of the ceremony. They are, however, quite subordinate to another personage, viz., the *mari*, or ceremonial chief for the whole village group. In all the village groups of the Koriki there is such a ceremonial chief whose office is hereditary. His presence is required at all the major ceremonies. He has duties to perform in them for which only he and a small number of deputies are qualified, and his main perquisite in every case is a pig.

The *mari* in the Ukiravi village group was a young man, Imara. In the *Pairama* ceremony here described no stage of importance was begun without his nominal

¹ An informant of real intelligence once asked me what caused the thunder. His ancestors had said it was the voice of the *kaitemunu*, but this might or might not be so. He thought that the white men might know, and even suggested that they were themselves responsible for the thunder. If there were much thunder over the mountains, he said, the rivers would be flooded, for where there was much thunder there would also be much rain. Should there be thunder in the south-east it meant that the Lakatois were coming.

supervision, and, indeed, on one occasion some delay was caused by his absence in the bush. Imara appeared to have a thorough and confident knowledge of his duties, and fulfilled them not without a certain dignity; though as an informant or exponent of these duties he was not altogether profitable to me.

BOYHOOD SECLUSION.

The *Pairama* ceremony in a sense provides a culmination to the boyhood seclusion; it is the principal ceremony of initiation. In the Purari Delta a boy will normally undergo "seclusion," and at the end of this seclusion will witness and bear a part in the *Pairama* ceremony. Subsequently, provided he or his parents can supply the requisite pigs, he may be initiated into the mysteries of other ceremonies, which are, to give their names only, *Aiaimunu* (commonly called *Kaiva Kuku* in pidgin language), *Upura* (bull-roarer), and the *Gôpi*.

It may be said, therefore, that the first stage in the ceremony is the internment of the boys in the *ravi*. (Pl. XXI., Fig. 2.) The average age of such boys would not be more than seven years in my experience. Some are almost children in arms. One lad at Ukiravi, who seemed about eleven, was quite a big boy among his fellow interneers. If, as sometimes happens, a boy's parents cannot supply a pig, he will probably pass by his seclusion, and in after life, when he has become acquainted with all the mysteries of the *kaiemunu*, will in honour provide a pig of his own.

As a little child the boy sleeps at home with his mother; he plays about the village; if he stray inquisitively up to the *ravi* platform, he is not unkindly shooed away, not only because he must not pry, but because it is feared that harm would come to him by entering the precincts of the *kaiemunu* before the price has been paid. When it has been decided to hold *Pairama*, these little boys find themselves led up into the *ravi*, and from that moment they must not leave the place until the ceremony is brought to a close—perhaps six months afterwards. It does not appear that there is any ceremonial connected with this first introduction to the *ravi*. The man normally responsible for introducing the boy, however, is his maternal uncle, or *apono*.

It may be explained that the *apono* has certain rights over his nephew, and may call upon him for small services. Furthermore, he officiates ceremonially for the boy, especially in the piercing of his nose and ears in babyhood, and later in his passage through seclusion and the *Pairama* ceremony. For these offices he is paid by the father in pigs, and himself makes handsome presents of ornaments, especially dogs' teeth, to the boy in return. In some cases it appeared that the child was introduced into the *ravi*, not by his *apono* but by his father. But it would seem usual for the child to undergo his seclusion and initiation under the especial care of his *apono*—in general, of his mother's male relatives.

In a certain percentage of cases a boy passes, by a sort of adoption, into the group of his *apono*, i.e. into the *larava* (or *ravi*-alcove) of his maternal uncle rather

than that of his father, as is normally the case. But even where there is no intention of transferring the boy permanently into his *apono's* *larava*, it will be an ordinary procedure for him to live especially in that *larava* during seclusion and initiation; and where the father and the *apono* are—as is frequently the case—of different *ravis*, the child will be likely to go to the *ravi* of his *apono* for his seclusion and initiation rather than wait until his own *ravi* (i.e. that of his father) performs a ceremony. There is no strict rule, however, in the matter. Thus it will be seen by the table of *larava*, etc., in *Akia Ravi* (p. 365) that some of the young initiates are for the time being connected with their *aponos' larava*; others with those of their fathers.

The reasons for the protracted internment of boys are not easy to understand. It is thought to make them "grow big quick"; and, indeed, it is possible that there may be some truth in this supposition, if a small boy can derive any such benefit from confinement within fairly narrow limits, with abundance of food and amid what would be, by the Purari standard, circumstances of the most luxurious comfort. Of course, neither the seclusion nor the subsequent initiation into the secrets of the *kaiemunu* are thought to turn the boys into men; some of the initiates are, as has been said, practically children in arms.

During the seclusion the boys allow their hair to grow. Previously they have had shaven scalps, except perhaps for one or two more or less ornamental tufts. But at the conclusion of the ceremony their hair has reached a length of probably not more than a few inches. In the Gulf Division, among the Elema people, this hair-growing is an essential feature of the seclusion, but no such importance can be attributed to it in the Delta, either as ornamental or as indicative of any moral or physical improvement.

The internees are expressly intended to be hidden from the eyes of women, especially—one might say only—from the eyes of those women who are of an age to have sexual intercourse. No harm would be done the boy if he were seen by a little girl, on the one hand, or by an old woman, on the other. I did not succeed in eliciting any explanation beyond this, that the boy's growth would be checked if he were seen by a woman. For his part, he may peer through the palm-leaf screen at women to his heart's content, and take no harm from it.

The length of the seclusion varies. It is regulated principally by the supply of pigs and other food. When this is all in readiness the time is ripe for the *Pairama* ceremony; so that the period of seclusion may be quite short or may last six months or more.

During this time the boys are well treated. So far from enduring any privation they are well fed, petted, and entertained. It is especially at this time that the bamboo choruses are heard. An old broken canoe is laid along the *ravi* floor. The men and boys range themselves on either side, and under the leadership of some individual who knows the conventional songs, they unite in an ever-repeated

refrain, catching up his words in one tremendous note which falls through half a tone to a long-drawn, singularly plaintive close. Meanwhile the singers are rhythmically pounding the canoe-board with their bamboos, end-on, so that the noise is nothing short of deafening. These solemn sounds may continue for hours on end, to the very patent enjoyment of all concerned, not least of the young *Pairama* boys.

Such entertainment is carried out especially for their benefit; and it was maintained in general that during their seclusion they should not be neglected, but that men of the village should make it their business to be seen as often as possible in the *ravi*.

On the whole it would appear that the *Pairama* boys have a thoroughly easy and irresponsible time of it, with nothing to occupy their small minds but play. They may be seen plaiting armbands if they are old enough to understand the process, but there is nothing resembling a course of instruction in the arts and crafts. Being asked how he occupied his time during the long months of seclusion, one small boy answered, laconically, "*Pokoia*"—"I stop nothing." If the *Pairama* boys derive much education from their internment it is less by any deliberately taught lessons than by seeing what is to be seen in the *ravi*, the hub of village life, and by listening to what passes among their seniors.

Normally the children are confined in the main *ravi* with the men, the latter, of course, coming and going as they please. The initiates are not to stray to the rear of the building, for, until the *Pairama*, they are supposedly ignorant of the existence of the *kaiemunu*. This, however, is apparently another case of the fictitious ignorance of so-called mysteries on the part of the uninitiated; for the *Pairama* boys of Akia Ravi (one of the two *ravis* in which I witnessed the ceremony) were confined temporarily in a house at such close quarters with the ill-concealed *kaiemunu* that they must have seen them every minute of the day.

One may occasionally see an old man sitting apart from the others, and dandling some little boy, probably a nephew, on his knee. It never appeared, however, that he was pouring moral precepts and tribal history into the childish ear, but rather that he was merely keeping the youngster interested. The very youth of some *Pairama* boys would make it impossible for them to apprehend anything in the nature of tribal lore from their elders, even if the latter were disposed or qualified to give them lectures in it.

Some of the boys—but not all—are placed under the special charge of attendants called *dolo*. These are for the most part young men or youths, and it is their duty to look after the initiates during their seclusion, e.g. to see that they duly receive their food, and to carry them hither and thither on their shoulders during the process of the *Pairama*. In return for his attentions the *dolo* will receive some payment or gift from the father of his charge. It was denied that he was in any sense an instructor: he is much more of a nurse.

There was one bright little boy named Kauri undergoing seclusion in Akia Ravi. As a number of Akia Ravi men were absent on some expedition, it was thought by some that the young initiates were not receiving the proper amount of attention; so Kauri's elder brother withdrew him for a time to his own *ravi*, Karara. There was nothing anomalous in this: it was simply necessary that Kauri should be transferred—over several hundred yards of plank gangway—under cover of darkness. In Karara Ravi he led an entirely idle life, and would possibly have been happier had he been left with the *Pairama* boys of his own age. He could survey the village and the river highway from behind the sago-leaf screen. Occasionally, if there were no women in view, he would take an airing on the *ravi* platform, though in doing so he ran the risk of a scolding from any of his elders; and several times he even scampered across to the rest-house in broad day, seeking the very profitable company of my cook-boy. Some time before the actual ceremony Kauri was returned to Akia Ravi.

It does not seem that the seclusion is trying or even very strict; it is not allowed to get the better of common sense. When two little boys in Mira Ravi fell ill they were even sent back to the care of their mothers until they recovered and could resume their seclusion.

BUILDING OF RAVIS.

The actual *Pairama* ceremony described here was performed, as has been said, by the two *ravis* Akia and Mira—"mother" and "daughter" respectively—which are situated opposite one another on the banks of the creek called Kairu in Ukiravi.

My first arrival in Ukiravi was on June 18th, in a desperate hurry and anxiety for fear the ceremony should be all over. The boys, it appeared, had been interned a month or so already. For the next five months nothing seemed to happen. The two *ravis* were being rebuilt, and the *Pairama* would not be celebrated until they were finished. Nothing could induce the builders to hurry, and the work went on with exasperating slowness.

The old Akia Ravi had been completely demolished. Its *kaiemunu* were housed temporarily in an unoccupied private house, where also the initiates were confined. Mira Ravi was still in use, though in very ill repair.

By November the two fine *ravis* were complete in every particular. There is always a jollification on the completion of a *ravi*, and a succession of night-long concerts—drum-beating and choruses. It is on this occasion also, viz. the completion of a *ravi*, that young unmarried girls may enter the building and dance. The social function at Akia Ravi resembled nothing so much as a ball and house-warming. A low transverse barrier was erected half-way down the interior. The *Pairama* boys were kept in rear of this, and many of the older men sat and smoked here also. The younger men, however, danced furiously and without the least semblance of order in the more spacious front compartment, while the girls, wearing their dancing *ravis*, amused themselves and some, at least, of the spectators, by a

rather more sedate movement, viz. by the swaying of their bodies at the hips, which they were better enabled to execute by leaning forward on staffs.

PREPARATIONS FOR THE CEREMONY.

The first stage of the ceremony took place on November 12th, when a combined expedition from Akia and Mira went out and cut a quantity of light timber for the erection of side racks in the *ravi*. These racks or platforms, called *bepe*, were roughly constructed the following day. They run the length of the building on either side, at a height of about 5 feet, and are intended merely to accommodate the old and new material of the *kaiemunu*.

Besides these a number of large mats, or rather wrappers (*akea*), were prepared by plaiting together the leaves of coconut fronds. Thirdly a number of seats were constructed for the initiates, so that, when they were taken out on the following day, they should not be incommoded by having to sit in an inch of water at the bottom of a leaky canoe.

THE CANE-CUTTING EXPEDITION AND THE "EPIE."

These preliminaries completely mystified the young initiates. On the morrow (14th) a large expedition, or *dakea*, of eighteen fully-manned canoes set out in the morning. In nearly every one of them was to be seen a *Pairama* boy seated between the knees of his attendant. The boys think they are accompanying a hunting expedition and nothing more.

The convoy proceeded upstream to a point on the River Biau. Here there is a junction of two streams, and the current is flowing very rapidly. All the canoes drew into the shore in a cluster, one or two anchored themselves to the bank by means of a liana, and the others held to these. Imara, the *mari* (p. 367) took his stand astride one canoe so as to be head and shoulders above all the other men. In his right hand he held a large trade knife, in the left a trade axe. After a good deal of chattering and discussion there is quietness, and Imara begins to cry out the names of the *Pairama* boys—"Evara Omaro-nu-mere," i.e. Evara, son of Omaro, etc. Prompted now and again, he runs through the whole list of names: it is apparently nothing more nor less than a roll-call.

Now he shouts, "We do not go out to hunt"—there is a pause and all are silent; "We do not go to fell canoe-trees"—another pause; "We go to cut cane." At this with one accord the canoes commence a violent rocking in the water, and there is a babel of excited voices. Some of the *Pairama* boys looked alarmed; some were delighted and threw themselves into the shaking with altogether misplaced enthusiasm; most, as far as I could see, were stoically indifferent.

This rocking of canoes is called *epie*. It is the recognized manner in which the *kaiemunu* indicate their approval of a proposition. Here it is understood to mean that the cane-cutting expedition may proceed with the full favour of the *kaiemunu*. If the canoes had not rocked the expedition would have been abandoned until a

more propitious time. I have seen a full-sized hunting expedition from Ukiravi return to the village an hour or so after leaving, solely because the canoes had not rocked when the *kaiemunu* were asked whether the hunt should proceed.

The ordinary method of procedure is for some individual who is ceremonially qualified—usually an elderly man—to shout his questions to the *kaiemunu*, who are thought to accompany the expedition. These are always leading questions: Shall we hunt? Shall we hunt on the River Baroi? Shall we hunt on the River Purari? etc. For a negative answer there is no movement; for an affirmative the canoes will all fall into an uncontrollable rocking.

It was stoutly and consistently maintained that this motion was caused by the *kaiemunu*, and that the men in the canoe did not consciously influence it. It happens that the sole exception was taken by no less a person than Imara, the *mari*, who on a subsequent occasion declared that the *epie* was all so much humbug. But it is very easy to obtain such an opinion from an informant who, in another mood, will be a firm believer in what he is at present deriding. It is safe to say there is a general belief that the *epie* is really caused by the *kaiemunu*. It was even said that if all the men in the canoe purposely rocked it they would assuredly capsize the thing.

It occurred to me (on a different occasion) that the small boys who happened to be in the canoes at an *epie* were contributing more than their fair share to the movement, and several of them were hugely amused when two men actually lost their feet through the violence of the rocking and fell into the bottom of the canoe. On a different occasion once more the question of the objective of a hunting expedition had caused a good deal of discussion, and the men of one canoe on the outskirts of the group (which was drawn up in mid-stream) had been advocating the Purari. The old chief had made several suggestions to the *kaiemunu* without satisfactory response. Finally he proposed the River Purari and the canoes began to rock, but the one to begin the rocking was very obviously the one that had first been in favour of the Purari.

There seems no doubt, however, that to some extent at any rate the canoe-rocking is automatic. The immediately unanimous nature of it is somewhat striking. I have not noticed any individuals making deliberate efforts to rock the canoe on these occasions; and, indeed, it would be quite impossible for an individual in a fully-manned dug-out to set up a vehement, almost dangerous, rocking at a moment's notice.

After the satisfactory result of the roll-call and the *epie*, the expedition spent the remainder of the day in cutting lianas, which were tied into bundles and laid in the canoes.

RETURN OF THE CANE-CUTTING EXPEDITION.

By sundown the *dakea* had reached Ukiravi once more. Some distance down the river the musical chorus of shouts could be heard. From all quarters men came flocking to the neighbourhood of Akin and Mira Ravis, while as if by magic every

woman disappeared from sight and hid herself in her house. After a dull day the sunset cast an unusual yellow glare over the whole scene. The banks of the creek Kairu were lined with cheering spectators, who continually struck the gangway on which they were standing with sticks.

Meanwhile the canoes paddled swiftly up the creek to where the two great *ravi*s face one another. The leading canoe came at racing speed to Akia Ravi, but before it had touched the bank several paddlers had plunged into the water, seizing the bundles of cane, and rushed up the gangway into the interior of the building. One upon another the canoes were beached and their occupants leapt out. Every two or three men, shouldering a bundle of lianas—perhaps 20 or 25 feet in length—would stagger along the gangway, until there was a perfect helter-skelter of forms going and coming. The *Pairama* boys were carried on the shoulders of their attendants into the *ravi* at the same frantic speed. At one point the gangway collapsed, and what with the rapidly failing light and the skurrying and dodging, it was a marvel that no accident occurred. Meanwhile those who stood in the canoes maintained a continuous rattling on the sides of them with their paddles.

After perhaps ten minutes or a little longer, the last of the cane had been transferred from the canoes to the interior of the *ravi*: the rush and the clamour subsided very abruptly, and the men dispersed to their houses in quietness. The reason for all this haste was lest the women should see, for it must on no account be known that it is mere cane which goes into the *ravi*. When the noise had died away the women reappeared and were coming and going as if nothing had happened.

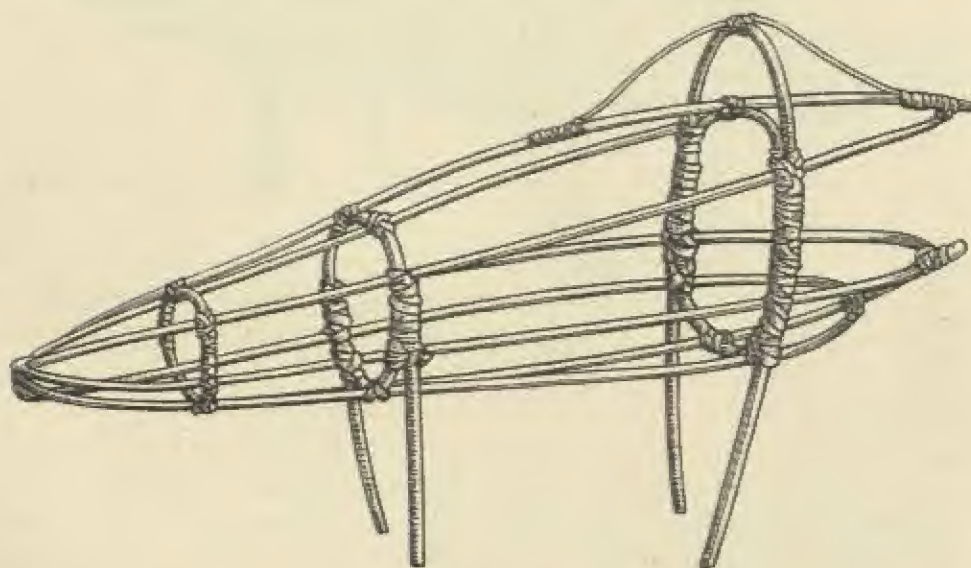
Nothing more occurred that evening except that a lofty palm-leaf barrier was erected to shut in the front of the *ravi* in order to conceal subsequent operations within it.

DEMOLITION OF THE OLD KAIEMUNU.

Next morning (15th), soon after sunrise, the old *kaiemunu* were brought forward from the *ravi-oru* by the several *ravi amua*,¹ and placed in the *larava* to which they individually belonged. When all was ready, the initiates—properly one to each *larava*, and thus one to each *kaiemunu*—being hoisted up on to the crazy old wicker figures, crushed and stamped them to fragments. As there were not enough *Pairama* boys in Akia Ravi to officiate one for every *kaiemunu* in this manner, two of them had to destroy two *kaiemunu* each. Where the initiate was very small and the old *kaiemunu* comparatively sturdy, the men had to give assistance: but, finally, there was nothing left of the once terrifying monster except a heap of torn fragments. Informants could not explain the rationale of the procedure, but it is essential that the old *kaiemunu* should be demolished by a *Pairama* boy. When the destruction was completed the shapeless remains were collected carefully, wrapped in the *akea*, or coconut-leaf mats, and set aside on the *bepe* platform.

¹ Each *ravi* has two *ravi amua* in particular. But the immediate family, i.e. "brothers" of these, are also more loosely called *amua*, and may assist in officiating.

In Akia Ravi one of the *larava* possesses a sacred spear named "Iomu," in lieu of the usual wicker work *kaiemunu*. For some reason the breaking of this was deferred until the following day, i.e. the 16th (this, I understand, was because the material for a new spear had not been got ready). When the time came, Iomu was seized at one end by a member of the *larava*, while two *Pairama* boys stood on it. With one or two heaves it was broken, and the pieces were wrapped up like those of the *kaiemunu* in a palm-leaf mat. The services of two boys were necessary because the spear was strong and the boys were light. Directly the breaking had been performed, two or three men of the *larava* took the piece of sago wood, and with a few strokes of an axe had roughly fashioned the new spear.



LENGTH 9 FEET }
HEIGHT 5 FEET } APPROX.

KAITEMUNU, half completed
at Mira R., 15/11/22.

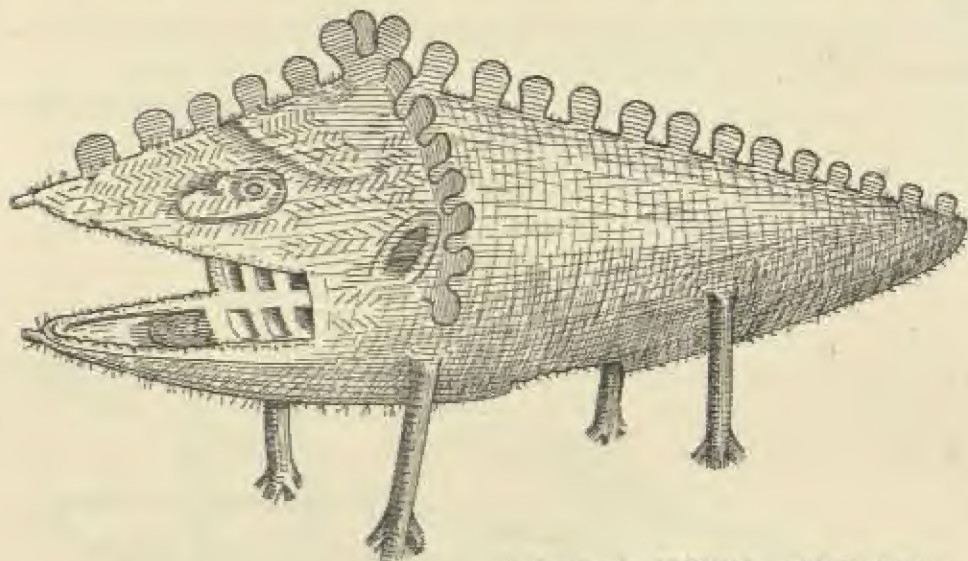
FIG. 1.—FRAMEWORK OF KAITEMUNU.

CONSTRUCTION OF THE NEW KAITEMUNU.

Similarly with the *kaiemunu*, directly the old ones had been destroyed the construction of the new began. This proceeded rapidly at first; though the enthusiasm soon abated a little, and the finishing touches had not been added until six days afterwards.

First a strong framework of cane hoops is made (Sketch I); upon these is twisted a strip of cane, forming a somewhat ornamental series of loops; through this passes the warp, and through this again the weft. Various accessories such as eyes, ears, frills, etc., are added last. The free ends of the cane strips are frayed out into whisker-like tassels.

When completed the *kaiemunu* is an outlandish-looking monster, perhaps 6 feet high and 10 or more feet in length, with a hollow interior and a vast gaping mouth. In any one *ravi* there will be little variation of pattern between the various



A typical KORIKI KAIEMUNU.

FIG. 2.—A KAIEMUNU.

Eyes, *Inamo*.

Nose, *Pina*.

Mouth, *Ari*.

Teeth, *Ni'iri* (formed by serrating the cane border).

Ears, *Keporo*.

Fore legs, *Eve*.

Hind legs, *Ari*.

Tail, *Oa*.

The device surrounding the eye is called "*Bosi*." With variants it is a common theme in decoration. No explanation was found for the meaning of the word *Bosi*.

The lateral frill is called *Kaukoro*; the same word is used for the head dress of stiff feathers worn by a man. Sometimes feathers are stuck in the *kaukoro* on the *kaiemunu*.

The longitudinal frill is called *Mina'a*, literally "a leech."

The hole in the belly is called *Beiono*, literally "navel." In some *kaiemunu* this hole is about 15 inches square. This feature belongs especially to the *kaiemunu* of Kaimare, Vaimuru and Maipua. Those of the Koriki appear never to have them (except in very modified form), and those of the Iari have them very seldom. The usual explanation is that they are meant for the man (or boy?) who assists in the basket-work from inside: he is able to stand up to his work.

The pad of cane (blackened) over the "forehead" is usual among the Koriki *kaiemunu*. It is called—

1. *Iara keia*. (*Iara* means "forehead." No one could tell me the meaning of *Keia*.)

2. *Kaia kuku* or *kaia neh*. (This expression means "a dark thunder-cloud." It was said that when the first *kaiemunu* was made and this pad placed on its forehead, a great black cloud was mounting in the sky, so the pad was blackened and called *Kaia kuku*, the thunder-cloud.)

The blackening is done nowadays with the ashes of the *Pairama iau* (vide p. 378) and also, I am told, with the ashes of the fire of the old *kaiemunu*, though I did not observe this done. One group of informants said that formerly a chief, when leading a raiding expedition, would don such a black forehead-band. This may be true, though I have no verification.

kaiemunu, though they may differ in size somewhat, or in strength and finish. Between the *kaiemunu* of different *ravi*s or villages, however, there is often a noticeable difference, which is no doubt inevitable, because these are never compared with one another side by side, and in the course of generations the types will be bound to deviate.

However, a *kaiemunu* is a *kaiemunu*. Never once did I hear it suggested that the figure was meant to represent any animal, fish or reptile. Some are certainly suggestive of pigs; others more of crocodiles; and, but that they are invariably quadrupeds, one might say they resembled fish more than either. Several *Pairama* boys in another village professed that the *kaiemunu* reminded them of nothing more nor less than a house.

A rough sketch of a fairly typical *kaiemunu* may be worth presenting in order to show certain details (Fig. 2). The members of the *larava* join in constructing the *kaiemunu*, and at any time three or four of them may be engaged on it together. (Pl. XXI, Figs. 1, 3.)

The *Pairama* boys were in high spirits after the exciting events of the past day or two. They had evidently received some instruction about the *kaiemunu*, for most of them were able to tell me the name of their own *kaiemunu* as well as the *imunu-vii* belonging to it.¹ Some of the onlookers found it rather droll for the little boys to speak up and name their *imunu-vii* just as if they were old men. Such necessary explanations are made to the boys at this, the appropriate time. But in the course of the *Pairama*, as in the preceding seclusion, the way to knowledge, and therefore a most essential feature of initiation, is merely to see. A *Pairama* boy, telling of his experiences during the *Pairama*, said that when the *kaiemunu* were brought out for the first time he had been frightened, and his father had said to him: "Ah, you thought there was nothing much in the *ravi*, but now you see this—the *kaiemunu*." Afterwards his father had told him to observe how the *kaiemunu* was destroyed and remade; for then, when he grew up and his father was dead, he would know how to do this work himself.

The *Pairama* boys assist perhaps by scraping and preparing strips of cane. But their special task is to thread the weft through the warp from inside the belly of the monster, while some man of the *larava* does the same from without. Thus one will see in the darksome interior of the *kaiemunu* a small boy sitting cross-legged, receiving the end of a cane strip which his uncle pokes through the fabric, and poking it back to him in the proper place. The young initiate is perfectly at his ease; when his services are required he scrambles or is lifted up into the huge mouth, and when they are done with, scrambles out again.

¹ It may be remarked that the *larava* alone, not the *ravi*, as a whole, has its food tabu of a certain species. In one *ravi* there may be, say, twelve *larava*, each with a different species of fish tabued to it. But in that *ravi* the twelve *kaiemunu* are, as far as I could see, precisely similar in all essential points. Yet in another *ravi*, where the same species are again found to be tabued by the various *larava*s, the type of *kaiemunu* may differ considerably.

There was nothing obviously ceremonial about introducing the boy into the belly of the *kaiemunu*, but it was nevertheless his exclusive right or duty to enter. No one of the previously initiated *larava* members would do the same: how, they said, could a big man twist and turn in so small a space? But neither, again, would a small boy other than one of the immediate novices be allowed to enter the *kaiemunu*: that is the business of the *Pairama* boy alone. Never, it may be remarked, did one of my informants suggest that the child was offering himself to or being devoured by the monster.

A large and well-constructed *kaiemunu* is the pride of its *larava*. To the *larava* group, indeed, there belongs a strong corporate spirit, and some little emulation exists between one *larava* and another. At one stage during the making of the *kaiemunu*, I saw an elderly man sitting somewhat apart from the others and sobbing disconsolately over the ill luck of his *larava*. His himself had just made a recovery—only a doubtful one—from fever, and was too ill to work; one of his brothers had gone to gaol and died there; and what with one misfortune or another, it was a sad thing to see so few men at work upon his *kaiemunu*.

Time and again as the work proceeded the men would pause to indulge in a kind of game or horse-play with their *kaiemunu*. This is called *kopai*, a general word for sport, play, make-believe. With a sudden shouting and beating of the *ravi* floor, five or six men of a *larava* would hoist the half-finished *kaiemunu* shoulderhigh and career up and down the length of the *ravi*, with a magnificent disregard for all obstacles. Often a number of *larava* would be so engaged simultaneously. This *kopai* happened many times during the six days in which the *kaiemunu* were building, but as the best demonstration I witnessed was on the last day, a fuller description is deferred for a moment.

PAIRAMA IAU: THE SMOKING OF THE KAIEMUNU.

The work of building had now gone on with intermittent industry from the 15th until the 21st. By this time the figures were practically complete. In the afternoon a curious ceremony (called *Pairama iau*, the *Pairama* fire) was performed, of which I could elicit no very satisfactory explanation.

The *kaiemunu* were standing in their several alcoves, and underneath each was set, at its forefeet, a freshly-made hearth, i.e. a small portable hearth made of mud in a palm-leaf carrier. On each of these was a collection of green leaves (or fragments of them) comprising coconuts, mangrove, a variety of pandanus, a reed called *orovi*, and a creeper called *kikini*. These were loosely packed up with dry and highly inflammable coconut leaves. Imara, the *mari*, and a deputy *mari* named Aia'a were present, but the lead seemed to be taken by Ako, a village constable and *amua* of Akia Ravi. While he was ready, others were still busy arranging their hearths, and Ako showed great impatience. Finally at his word the dry coconut leaves were kindled and volumes of dense smoke arose, wrapping themselves about

the *kaiemunu* and making the atmosphere of the *ravi* almost unbreathable. The *larava* men would pick up their *kaiemunu* and hold them above the fires, turning them this way and that so as to give them as thorough a fumigation as was possible.

Out of the dense cloud of smoke there now came sounds of spitting, puffing, and blowing. The *Pairama* boys had chewed *iri-kape*, some hot peppery bark, and were spitting and spraying with all their might down the throats of the *kaiemunu*. Indeed, some of the boys were producing little more than sound, and may be said to have spat themselves to the point of exhaustion. They would also spit over the exterior of the *kaiemunu* and rub in the mixture with their hands. Some few others were also engaged in the same way, but it was obviously a rite in which the *Pairama* boys were principal performers.

No explanation was forthcoming of the significance of the particular leaves used in this fumigation, though it was maintained that these varieties were the essential ones, used invariably since ancient times. The general purpose of this ceremony of fumigation is, I was told, to make the *kaiemunu* swift and active—"doko," or lively, so that they may be energetic in accompanying the distant hunting expeditions and may provide them with many pigs. But wherein the logical connection exists I was unable to discover.

So also, the spraying with spittle after chewing the hot bark (or wild ginger also) is meant to invigorate the *kaiemunu*. Certain hot barks (called generally *iri-kape*) are constantly chewed as stimulants, particularly before a hunt. With the little hunting charm called *ke' upura*, it is the practice to chew some such bark, spit on to the palms, and then roll the charm between them; lastly, the intending hunter will rub the spittle over his own face and limbs.

THE GAME "KOPAI."

When the fires of the *Pairama iau* had practically burned themselves out, there arose a sudden clamour in the *ravi*, shouting and rattling of sticks. I distinguished cries of "*awapu ewako*"—"a thief is here," intended to beguile any women whose curiosity might be aroused by the sounds of scuffling and brawling within the building.

Every *kaiemunu* was seized and borne at a run towards the front of the *ravi*, where they at once became wedged in a striving and apparently inextricable mass. Each *kaiemunu*, carried by four or five vigorous young men, butts and gores at the next, or rears up in the endeavour to bear it down to the ground. No game could be more exciting to the spectator: indeed, he is well advised to keep at what distance he may. Everything is done in the best of good humour. Strangely enough, there does not seem any great rivalry between different *larava*. All are content mainly with the mere pushing and shoving, and do not appear to mind whether they are for the moment in the ascendant or whether they are jostled and trodden down by a confusion of men and *kaiemunu*.

From their actions it might seem that the monsters were meant to be fighting one another, somewhat after the style of pigs; but if so, it would not be possible to name a winner. Informants were quite unable to say what the men were playing "at"; they were simply playing. The purpose of the game (apart from its value as a thoroughly enjoyable rough-and-tumble) is once more to invigorate the *kaiemunu*, to put life into it. After all this *kopai* he will be a mighty pig-hunter for the *ravi*.

When this furious *meléc* had lasted some five or ten minutes, the individual *kaiemunu* began to separate. Some, their bearers fairly exhausted for the moment, returned to their *larava*. Others, however, continued to perform evolutions on their own account. In the case of these latter it appeared—and, in fact, it was professed—that the *kaiemunu* itself was making the movements, and the bearers were merely responding to them.

Some of the *kaiemunu* simply maintained a gentle regular movement, up and down, or swaying from side to side. There was no indication here that the bearers were very excited and carried out of themselves, or that the movement was anything but intentional. But the conduct of other *kaiemunu* was violent and erratic in the extreme, and their bearers seemed taxed to the utmost to keep pace. For example, one by the name of Koivi would stand a moment shaking in the grasp of six lusty young men; next would seem to make a frantic plunge and charge crashing into the *bepe* platform; then would dart back and forth, while the bearers, fairly panting for breath, hardly seemed to be carrying it as much as clinging to its legs or whatever they could lay hold of.

One man, who was perhaps the leading spirit among Koivi's bearers, held him by the stout cane protruding from his nose, and addressed him continually in a low coaxing voice, "Koivi, Koivi," almost in a whisper.

Koivi, who with his huge gaping mouth and little red eyes was absurdly life-like, would presently respond with some sudden violence, at which his bearers were manifestly delighted.

A favourite trick of this as well as of other *kaiemunu* was to bury its nose among the dry skulls in the *larava*, while the bearers held it thus, with its tail tilted high in the air. It certainly looked as if the monster were attempting to devour what was there, and it was explained that this gesture indicated that the *kaiemunu* required more food to be placed in the *larava*, or was angry because it had been neglected. Another returned again and again to Aia'a, one of the *mari* or ceremonial chiefs. It would pause, its nose not a foot distant from Aia'a's face as he sat on the floor, and very imperturbably cross-questioned it. Now and again the *kaiemunu* would indulge in more or less violent antics, which were taken to indicate affirmation. The upshot of this interview was that the sickness of a certain Omaro was attributed to the anger of the *kaiemunu*. Omaro had not done his share of work in the building of the *kaiemunu* itself. The recovery of the sick man, however, would be assured

if his wife cooked some dishes of food and sent them to the *ravi*. This consultation, it must be remarked, afforded no small amusement to all who took part in or heard it, and possibly was merely a means of "putting one over" on Omaro. But it should be remembered that food for the men of the *ravi* is food for the *kaiemunu*, while to neglect one's friends is to neglect the *kaiemunu* and incur its displeasure.¹ Thus a supernatural sanction seems to be given to an every-day necessity or rule of social conduct.

A few comments may be added upon the extraordinary movements of the *kaiemunu* during the *kopai*. They are regarded as another phase of *epic*, which has been already referred to in the description of canoe-shaking, and they have the same—or rather more striking—appearance of collective automatism. It may be remarked that the bearers are in a state of considerable excitement; they are unmistakably worked up in the merely physical sense, as, for instance, a man is in the middle of a game of football. There was the same striking unanimity of movement; possibly an instantaneous response on the part of all the other bearers to the movement of one leading spirit, though I cannot say I detected any effort on the part of an individual to direct the movements of the others when once they were all fully excited.

At certain stages of the *kopai* with the above-mentioned *kaiemunu* named Koivi—which kept six men exceedingly active for more than half an hour—it did actually seem to me that at times the bearers hardly knew what the *kaiemunu* was about to do next.

BURNING OF THE OLD KAIEMUNU.

The new *kaiemunu* having been completed and duly subjected to the *Pairama iau*, the remains of the old *kaiemunu* had now to be destroyed by fire. Soon after midnight 21st/22nd, the fragments were ablaze on the ground before Mira Ravi. From Akia, on the opposite bank of the river, the spectacle was singularly impressive. The towering *ravi* front, glowing red in the light of the flames, was outlined with startling vividness against the black background of the forest trees. The night was breathlessly still, except for the roaring of the bonfire and the swaying of a few palm-fronds in the ascending currents of heated air. Around the fire were gathered scores of men revelling in the fierce heat of it.

The fire in front of Mira had subsided before operations were begun in Akia Ravi. Imara and Aia'a had officiated in the former; now they crossed over to Akia, and began to gather together the bundles of fragments.

These two men performed all the work unassisted. They dragged or carried the large packages in the *akea* mats to the front of the *ravi*, where they stacked them, and then examined the *ravi* carefully again to see that nothing had been overlooked. Some bundles were thrown out and heaped together on the ground close to the river.

¹ Any dish of food brought into the *ravi* is commonly set down in the *lamua*, and may be left there for a while as an offering to the *kaiemunu*.

When all was ready, a lighted brand was applied by Imara, the *mari*. The old cane burnt fiercely, fed from time to time with further bundles of fragments.

No sooner had the fire been kindled than the men, who hitherto had sat watching Imara and Ain'a at work, hastened out and clustered around as closely as the heat would allow. For the most part, they turned their backs to the fire, presumably because the heat was too severe to face; many were caught by the leaping sparks; nearly all for some reason furiously scratched themselves. The *Pairama* boys were to be seen among those crowding about the fire. The men were for the most part silent, though they conversed at will; there was no shouting or visible excitement. It was somewhat remarkable that they should press so closely about the fire, for, although Purari natives, like most others, love a fire, the heat of this one seemed now and then to be giving them some discomfort.

After a final burst (the last of the bundles being thrown on), which caused the gang-way on which the spectators stood to catch fire, the great furnace began to die away. Imara, with a long stick, was busy thrusting into the fire those fragments which chanced to have escaped. The other men, taking their paddles, were dispersing to their canoes which were moored close by; but before leaving the scene they raked and hooked brands out of the fire, which was now a great pyramid of embers, and took them down to the canoes.

THE BATHING CEREMONY.

The canoes were manned by all the younger men. The *Pairama* boys sat, as before, between the knees of their attendants. By about 2 a.m. all the canoes had left Ukiravi and were paddling upstream against a strong tide and current. In rather more than an hour they had reached their destination—a sago-camp with several deserted houses on the small river called Aiveiki. Here all the canoes were made fast, and men and boys went ashore, kindled fires, and settled down to sleep or talk for the short remainder of the night. But the first thing they did was to smear and blacken their bodies with the brands, now long extinguished, which they had obtained from the burning of the old *kaimunu*.

Before dawn the fires were blazing brightly again and the camp was in a bustle. The canoes were manned and paddled a short distance—about ten minutes—to where, at the confluence of two streams, there stood a bank of firm sand. Some canoes had reached this bank (almost precisely at sunrise), others were still in midstream, when with a sudden and unexpected shout every man leapt into the water. For ten minutes they swam and played with the greatest enjoyment, the smallest of the *Pairama* boys astride the backs of their attendants. At last, clambering up on to the sand bank, they fell to scrubbing off the soot and grime of the previous night, and, when this was done, re-embarked in the best of humours for the sago-camp. Here they made a breakfast and decorated themselves, as they always will before returning from an expedition, with flowers and bands of young pandanus leaf.

At 9 a.m. they returned in somewhat spectacular fashion, passing down the main river through Ukiravi. Instead of sitting down in the bottom of the canoes, the *Pairama* boys were now standing with the men and paddling with mock paddles, which had been improvised from sago midribs at the camp. Before reaching their own *ravis*, Akia and Mira, however, they delayed for nearly an hour in a side stream, until the *ravis* should be tidied and prepared.

PARADE OF THE PAIRAMA BOYS.

Here Imara, Aia'a, and one or two others were gathering up all the scraps and fragments of new cane which had been left over in the making of the *kaiemunu*. These were wrapped up with the same amount of care which had been shown in gathering the remains of the old *kaiemunu*, and put aside on the *bepe* platforms. The floor was swept, and certain fragments too small to pick up were allowed to disappear through the chinks. The *kaiemunu* had been carried into the *ravi-ora*, and a screen of palm leaves erected about the dead ashes of the previous night's conflagration. There were numerous spectators of the returning expedition and some excitement among the women who saw it, but the tired participants were no doubt glad enough to disperse to their homes.

During the forenoon the first samples of dogs' teeth (*ori*) began to appear in the *ravi*. They were laid out on pandanus mats, or else suspended in some conspicuous position. The *apono* or maternal relatives of the *Pairama* boys had been busy preparing these for some time previously, sewing them into very attractive necklets, but it was not until the following day that the full display of these gifts was to be made.

In the meanwhile men and women were preparing for the parade of the initiates. By 4 p.m. the painting and decorating were finished. Seven or eight canoes started out from Akia and Mira *Ravis* laden with men and women, all in the finery of feathers, croton leaves and face-paint. In each canoe were two or three *Pairama* boys carried astride the necks of men who danced continually. Indeed, everyone in the canoe danced, sometimes at great risk of upsetting it. The dance was quite formless, and appeared no more than a sort of jumping for joy.

Everyone was in the highest of spirits except the *Pairama* boys, who looked thoroughly abashed and unhappy. Sitting astride the necks of their bearers, they clung to their hair and submitted to a continual flicking with a twig of croton in the hands of some proud father or mother. Every *Pairama* boy who was subsequently questioned professed that in the midst of this triumphal progress he felt no other emotion than that of *makiri*—shame and embarrassment.¹

The parade proceeded slowly down the creek Kairu to the main river, and thence back again. It occupied 30 or 40 minutes in all. As it neared (on the return

¹ During this parade some of the boys wore new calico loin-cloths. These were merely for decoration. An initiate at *Pairama* is not given a loin-cloth: he enters the *ravi* for his seclusion naked, and goes out naked.

journey) the bridge which spans the creek between Akia and Mira, one canoe-load of women performed a curious little mime. As the canoe crept slowly toward the bridge a woman named Kerua stood crouching on the prow with bow and arrow fully drawn. She peered intently among the reeds as if stalking a fish there, and, finally, letting fly her arrow, sprang after it with a prodigious splash, clutched it to her breast, and scrambled out on to the bank. Then without a pause she came tearing, evidently at her top speed, across the bridge from the Mira to the Akia side, regardless of its always parlous condition, the bow and arrow still clutched with both arms across her breast.

A second woman followed suit, but without the same delightful abandon of acting which Kerua had shown; and then, together, they repeated the performance several times on the Akia side of the river. This, I was told, was to commemorate the boyish exploits of one of the initiates, Koivi, as a shooter of fish; the women were respectively his mother and sister. No general name except *kopai* (play, sport, humbug, etc.) was given for this kind of demonstration, though it was said to be a common feature of *Pairama* ceremonies.

DOGS' TEETH PRESENTS AND THE SLAUGHTERING OF PIGS.

On the following day (23rd) the *Pairama* ceremony may be said to have come to an end. In the morning the *kaiemunu* were once more brought out and placed in their *larava*. There was by now a full display of the *eri*, or dogs' teeth, as well as of a few other ornaments. In every case it was the *apono* of the *Pairama* boy and the men of the *apono's larava* who made this gift of ornaments, although in some cases the boy was not necessarily connected with his *apono's larava* during the *Pairama*. Every boy's parents, on the other hand, supplied the *apono* and his *larava* with a pig.

The strings of dogs' teeth are exhibited with some little ostentation, sometimes stretched full length along the *ravi* floor, sometimes coiled into neat spirals. The donors (rather than the recipients) sit quietly enjoying the sight of all this wealth; it is a proof of their generosity. Properly the *Pairama* boy is invested with his dogs' teeth necklet by his *apono*. It is coiled round and round his small neck and looped under his arms until it resembles a bristling ruff far more than a necklet.¹

Hereafter the initiates may come and go about the village as they please; but it is the delight of their elders to make them sit, shining with coconut oil, and fairly laden with their ornaments, on the platform of the *ravi*.² Thus may they often be seen for months after the *Pairama* is concluded. (Pl. XXI, Fig. 4.)

Throughout the morning pigs were being dragged or carried to the *ravis* by the fathers of the initiates. They had already been killed in the usual way, viz.

¹ One initiate to a recent *Pairama* in another village was wearing a string of dogs' teeth 23 feet in length; it was composed of the canines of approximately 250 dogs.

² In some cases the boy's chest and shoulders are lightly smeared with red paint. This, however, is apparently not essential.

with bow and arrow. Each carcass is laid directly before the *kaiemunu* with which the boy was associated, and this is most distinctly considered an offering. I was even informed by one man that the *a'avaia* (spirit, shadow, etc.) of the slain pig passed into the mouth of the monster and out through the small hole corresponding to its fundamental orifice, though I do not believe that any such definite theory was commonly accepted.

During the afternoon the pigs were taken outside and singed. The reason for the singeing, which is done very thoroughly, is in part to destroy the bristles; but it is also said that the carcass becomes bloated with the heat and is on that account easier to dissect. The actual cutting-up is in the hands of the *maris*. But as there are twenty and more full-grown pigs, and the work is very difficult, the *maris* contented themselves with cutting the hide into a series of strips from nose to tail. The animals were then left to those immediately concerned to dissect into the same number of portions as there were strips of hide. At such a time the *ravi* interior is not attractive to the senses of a European, though no doubt few sights could be more agreeable to a native.

BURNING OF THE SURPLUS CANE.

To all such ceremonies as the *Pairama*, which involve the manufacture of some ceremonial object, there is a subsequent and final stage in which the waste products are formally destroyed. It was remarked that the fragments of cane—a mere tangled mass—were carefully gathered and stowed away on the *bepe* platform. Here they will remain indefinitely until a hunting expedition goes out expressly for the purpose and brings back a pig. They will then be burnt, and this bush pig singed in the flames. Thus, in theory, there is not one particle of the material of the *kaiemunu* that escapes destruction by fire.

In earlier times it was not a bush pig which was used for this purpose, but a human victim, or *gōpi*. The expedition was none the less a hunt. Cannibalism in the Purari Delta appears to have been in the main ceremonial. When a victim was required to consummate some ceremony, the *ravi* organized an ambush or a raid, and caught a man just as they now catch a pig.

As this final stage was to be deferred without date, it was out of the question that I should wait in the hope of seeing it, but from a good many accounts it is possible to construct a description of the procedure. Besides the burning of the waste products, it includes the offering of the *gōpi* to the *kaiemunu*, and a further remarkable rite called *Dakea Kavana*—"the payment for the expedition."

THE "DAKEA KAVANA."

When the successful hunt returned at evening, the corpse of the victim was borne from the canoe to the *ravi* amid great enthusiasm. The men uttered that prolonged shout or roar, which has a singularly exciting effect upon the listener,

and rattled their paddles upon the sides of the canoes with the rhythm called *raruki raruki*.

That night the corpse lay in the *ravi*, and the rite of *dakea kavana* was performed.¹ The hunter who first brings down the victim with his arrow is known as the *kenia vake*, and to him belongs the honour of the day. At night he comes to the *ravi* bearing a lighted flare of coconut leaves. He is followed by others of his *larava*, who also have their torches, and by his wife.

The *kenia vake* goes from one alcove to another waving the handful of flaring leaves about them, and finally scorches the body of the victim lying on the floor. The other men follow suit, but whereas they extinguish their torches, the *kenia vake* hands his over, still alight, to his wife, who has been standing outside on the *ravi* platform. The woman makes off with it toward her house, but is speedily overtaken by some man or other, who snatches it from her hand and stamps it out. Then he goes into the woman's house and has intercourse with her, in which he is followed by any and every man who feels so inclined and is ready to provide an armshell or its equivalent by way of payment. There is no limit to the number of men who may avail themselves of this opportunity, except that no man of the woman's own *larava* nor of that of her husband would have connection with her. She is supposed to make a mud smear on the back of every man in turn with whom she consorts, and it was said that this would betray any one who had wrongfully availed himself of the privilege of *dakea kavana*.

On the following day the *kenia vake* is paraded in triumph through the village, standing astride the canoe and balancing himself with a spear. When the victim has been finally disposed of, the skull will belong to the *kenia vake*, or slayer, and will be placed among the other skulls—human, pig, and crocodile—which are jumbled together on the floor of his *larava*.

The literal meaning of "*dakea kavana*" is "the expedition payment," though it was never made quite clear to me who was being paid—the *kenia vake* for his prowess, his wife for her favours, or her admirers for their armshells. It was sometimes denied in Ukiravi that the rite is carried out nowadays, but less bashful informants declared that in due course it would be observed in every detail when the old cane was to be burnt. Numerous witnesses admitted they had borne a part in more than one previous *dakea kavana*.

OFFERING OF A VICTIM TO THE KAIEMUNU.

After the corpse has lain in the *ravi* all night it is taken out on the following morning and singed (just as a pig is singed at the present time) over a fire of the cane scraps. After this it is cut up, but, as would appear from a number of accounts,

¹ It appears that *dakea kavana* may be incidental to other ceremonies besides the *Pairama*, and that it is somewhat practised in a modified form.



FIG. 2.—GROUP OF PAIRAMA BOYS DURING THEIR SECLUSION
IN MIRA RAVI.



FIG. 4.—GROUP OF PAIRAMA BOYS WITH THEIR ORNAMENTS (AFTER
THE CEREMONY).



FIG. 1.—KAREMU IN A RAVI-ORU, LAHI, PURARI DELTA.



FIG. 3.—TWO KAREMU IN THE GAME KOPAL.

not in the same way as a bush pig (*vide* p. 385). The custom was to expose the corpse on the *ravi* platform, where any one might come and hack himself off a morsel with a cockle shell or other implement. These pieces would be taken home and cooked and eaten by individuals.

The head of the victim was, however, offered to the *kaiemunu*. These latter were all brought forward once more from the *ravi-ora* into their *larava*, and the head was introduced into their mouths in turn. It appears that the *kaiemunu* would be seized and made to dance and caper about with this grisly morsel in its belly; then would be up-ended, so as to vomit it out on to the *ravi* floor.

In certain other tribes of the Purari it was said to be the early custom to offer the whole body of the victim to the *kaiemunu*. One informant (of Maipua) said that in former times the monsters had not been fitted with legs, and were in some manner propelled forward, as if crawling on their bellies, on to the dead victim. And one explanation for the existence of the square hole (*beiono*) in the under surface of the wicker structure was that the victim, after being thrust into the mouth of the *kaiemunu*, was dragged out through this hole in the belly, so as thus to pass clean through the monster. This, however, could not have been the case at Ukiravi, as the *kaiemunu* of the Koriki tribe are almost invariably without the *beiono* hole.

Some witnesses assured me that the offering of the *gōpi* head was made to the *kaiemunu* on the occasion of certain other ceremonies, but I cannot say whether this is true or no. In these times of peace the bush-pig has happily been substituted for the cannibal victim. It was declared that, when the time came to burn the cane, the whole ritual would be carried out in this more humane, though, no doubt, less exhilarating, manner.

NOTES ON BIRTH, MARRIAGE AND DEATH CEREMONIES OF THE ETĀP TRIBE, CENTRAL CAMEROON.

By L. W. G. MALCOLM, M.Sc.

(*Department of Archaeology and Ethnology, Bristol Museum.*)

THE following notes were made at Bagam, the headquarters of the *Eyāp* tribe, in the grassland area of Central Cameroon, in 1917-18. The information was given by the government interpreter, *Nde ta mfo*, and verified by the head-chief (*Pufon*).

CHILD-BIRTH.

The information concerning child-birth was given me by the recognized tribal accoucheur (*ngana fwo*). This man is the only leech in the tribe and has a distinct social position, ranking as one of the head-chief's attendants.

When a woman expects the birth of a child there is but little visible preparation. She does not work on the farm, but remains in or near her compound. Until the pains have set in she does more or less work in the compound, except in the preparation of food. Until the last stages of labour she rests in a raphia-palm bed in her hut.

About three months before the child is expected she is given an infusion (*mapod*) to drink by the native accoucheur. This is made from the leaves of a vine and palm-wine or water. Immediately before the delivery another infusion (*ndwopot*) is prepared, and drunk out of the open palms of the native accoucheur.

Together with two women (*kwei mon*) experienced in such matters, the native accoucheur remains in attendance until the delivery is complete. When these women enter the hut for the first time they address the expectant mother with the words, "May you have a successful delivery." They make all preparations for the coming event by preparing hot water, and a mixture of palm-oil and camwood powder (*pui*). The delivery takes place when the woman is in a semi-reclining position. One of the attendant women sits on a low stool and lifts the patient on to her knees and clasps her round the body under the arm-pits. The other woman then draws the legs down and apart. The native accoucheur presses or kneads the abdominal region in a downward direction, with the object of giving a direct expulsion of the child.

After the birth the umbilical cord is severed by the man with a small iron-bladed knife (*mii yuo ŋtu mon*) which is used for this purpose only. Several inches are left, and the end is split into three parts, which are plaited together. It is then

anointed with a mixture of palm-oil and camwood powder. The delivery of the placenta generally follows shortly after, and it is buried inside the hut at the foot of one of the walls.

The mother is placed in her bed, where she remains as long as she feels exhausted. As a rule, she rises about the end of the second day. Cases are known where a mother has gone to work on a farm the day after delivery.

In the event of the position of delivery being abnormal, the mother is given another infusion (*ndot*) to drink. The native accoucheur sits on the ground facing the patient, and by internal manipulation attempts to assist the delivery. Cases have been known of unsuccessful delivery, more particularly when the feet have emerged first. In such cases delivery has been impossible, and both the mother and child have died.

The genitalia do not receive any special cleansing treatment.

A miscarriage is called *ngōn tuimi no*, and is of fairly common occurrence. Twin-birth (*fa*) is not usual, and is greatly desired. Very rarely triplets (*fa ikēt*) are born, and on such occasions there are great rejoicings in the tribe. Twins and triplets are considered to be under the special protection of the head-chief.

The treatment of the new-born child is very simple. One of the attendant women rubs its body all over with wood-ashes, after which it is washed with warm water. It is then anointed all over with a mixture of palm-oil and camwood powder. A cord with pendant amulets to ward off evil influences is then placed round its neck. A thick necklet made of grass or cloth is sometimes used to prevent the infant's head from "rolling about." In addition, all children wear necklets made from a creeper (*ndot*).

After the cord has fallen off, the infant is again rubbed all over with the mixture of palm-oil and camwood powder. It is suckled first of all by one of the attendant women, but when the mother's milk begins to flow it is handed to her.

As a sign of motherhood the mother carries a small woven square bag with short plaited handles. It has two light blue vertical borders about two inches in width. If twins have been born, a leaf (*mbō pot*) of *Alchornea cordata* is attached to a piece of string and worn by each of the twins on their forehead. The leaves are sprinkled with camwood powder from time to time. The father wears five feathers of the *ngō* bird in his forehead hair, the tips radiating fanwise in front. These are sprinkled with camwood powder. A cloth cap (*cuo*) in which five feathers are placed may also be worn. In addition, he carries two small square grass bags with blue vertical borders, similar to that carried by the mother.

BETROTHAL AND MARRIAGE.

While still an infant a girl may be selected as a future bride (*iyōn ōgōi*), and she lives with her parents until she is claimed by the bridegroom. This may happen

a few months after she has reached the age of puberty. The state of fitness for marriage (*ākā ntā mīngwi*) is determined by the girl's parents, who then inform the prospective bridegroom. For females the age of puberty varies between eleven and fifteen; for males it is about thirteen. It was not found possible to ascertain whether there were any special ceremonies to celebrate the coming of the time of puberty or afterwards.

The time which elapses between the time of puberty and marriage is known as *ākā nzo ākuu*. Cohabitation during this period is strictly forbidden by tribal custom, and offenders are punished severely by the head-chief.

A flogging (*āgwū*) is generally administered to both of the guilty parties. Illicit intercourse is known as *nso pūu mīngwi*.

When it has been definitely settled that the marriage is to take place the time chosen for it is during the moon's first quarter. The prospective bridegroom (*āfo moā nā*) goes to the compound of the girl's father (*te mīngwi*), and gives him the dowry or marriage price (*ākaap tē*). In the case of an ordinary marriage this is generally in the form of goods or money to about the value of £5. If the total price is paid in native currency it is taken by the girl's father, who does not count it but accepts it as being correct. If the prospective bridegroom is a wealthy man it is always expected that he pay in cash and not in kind.

In some cases the money is paid in instalments, not in a lump sum, the first payment being given about two months after the girl has reached the age of puberty. Presents (*ākaap nwe mwo*), such as goats and other live-stock and palm-oil, must be given to the girl's immediate relatives. In certain cases, particulars of which could not be ascertained, gifts of money must also be given. These presents are supposed to be all handed over on one appointed day.

Before a girl can be married all her relatives must agree to the transaction. The bride's father (*te moā nā*) decides the actual day the ceremony is to take place. A great number of marriages in Bagam are celebrated on the market day (*yee ākaapā*) or the eighth of the week.

In his compound the prospective bridegroom makes all preparations for the coming event by laying in a stock of food-stuffs and palm-wine, and seeing that the bride's hut is ready.

On the appointed day the bride (*moā nā*) is prepared by her mother for the ceremony. Her body is washed all over and sun dried. Her mother (*meh moā nā*), or another woman, then covers her body with a wash made from powdered camwood and water. The liquid is "spirted" in the form of a fine spray from the mouth of the operator all over the bride's body, which, when dry, becomes a vivid red colour.

The face is shaved by means of an iron razor (*kutō*), and the head in the form of a crescent tonsure, i.e. the frontal part of the head from trignon to trignon over the vertex.

The marriage clothing of a bride is as follows:—A loin cloth (*nze moñ ndā*) of locally-grown cotton, a waist-cord (*kwōpēi*) made from twisted string, and which supports a pubic cloth (*yuāp siso*), a necklet of coloured trade beads (*naap*), armlets (*ntsoñ*) of brass or iron wire, and anklets (*tse kwii*) of the same materials. She also wears finger rings (*guropw*) and ear-rings (*kwo*) made of brass or iron wire. An elaborate cap (*cuo moñ ndā*) of cloth, ornamented with cowry shells and glass beads, is worn on the back of the head.

The bridegroom's personal preparations are very simple. His body, after being washed, is smeared all over with a mixture of palm-oil and camwood powder. His clothing consists of a loin cloth, and a gown (*nze*) which may be sleeved or sleeveless. After this preparation, he goes to the bride's father and announces that "all things are ready for the bride." He is informed that she will go to his compound after sun-down. About this time a procession is formed in the compound belonging to the bride's father. A proxy for the bride's mother (*mē iyūñ*) and one for the father (*tē iyūñ*), together with the bride and a number of small girls, then proceed to the bridegroom's compound. The *tē iyūñ* heads the procession playing a pluriarc ("harp"-*ṣū*). The children dance and sing (*ntsē iyūñ*) from the time they leave the compound of the bride's father until they reach their destination. Each of the adults in the procession carries a small-patterned grass bag on the left wrist.

On her arrival at the bride's compound the bride, accompanied by a number of the children, goes at once to the hut (*ndāp moñ ndā*), which has been prepared for her. The bridegroom is not allowed to approach this hut during the period of the marriage festivities, but must remain in his own (*ndāp ndūo moñ ndā*) all the time. If he has already other wives they also must remain in their own huts. The proxies for the bride's mother and father occupy a hut (*ndāp mē iyūñ*) close to that of the bride.

The guests who have been invited to attend the marriage feast assemble in the yard of the bridegroom's compound towards evening and indulge in dancing and singing. The instruments played are the pluriarc and drums, and sometimes the native piano or sansa. The food and palm-wine provided for the feast is supplied by the bridegroom, who also sends food and a supply of firewood to the bride's hut. After a certain time the proxy for the bride's mother, attended by a few of the small girls, go to the bride's hut, where they remain singing and dancing for some time. The proxy for the bride's father does not leave the hut at all until the feast is over. About nine o'clock food (*mwo nuñwa moñ ndā*) is taken to the bridegroom's hut. The bride is then escorted to her husband's hut and here she is presented with a marriage stool (*dzuñ moñ ndā*) by her husband. When she is seated, the proxy for her mother is given a present either in money or in kind. This woman then returns to her temporary hut, where she remains for seven days. The bride remains in the bridegroom's hut for the whole of the first night.

The guests generally depart about midnight. If the bride is the first wife, then all the guests are notified the day previous to that on which the marriage ceremonies take place. In other cases they are notified at any time. The marriage festivities are, as a rule, continued for three successive nights.

No special ceremonies are held if a slave woman is married. If the woman is purchased outside the tribal area it is usual to give a present as well as the marriage price to her father, or, if he is dead, to her senior living male relative. Cases are known where brothers have claimed the dowry for their sister. Formerly the head-chief adjusted any quarrels about the marriage price, but now any cases go before the native court for settlement. An instalment is usually paid on behalf of any woman purchased in the tribal area, and when a child is born the remainder is paid, together with presents, to the woman's father or nearest male relative.

There is no limit to the number of wives a man may have. In all cases the first wife is the legal one, and her eldest child is the husband's heir.

Marriage of the Head-chief.

Before succeeding to the rule of the *Eyāp* the heir is allowed to marry in accordance with the usual tribal customs. After his accession further wives are acquired either by purchase or presentation. In these cases there is no ceremonial form of marriage.

A woman may be obtained from a neighbouring tribe, usually on the advice of a friend (*soñ foñ āgwutop*). The woman (*āgwii foñ āgwutop*) is escorted to the head-chief's compound, where she is handed over to the care of the head-chief's mother (*ma foñ*) or one of his head-wives (*miyo*).

When there is a likely girl or woman in the tribe, the head-chief is informed. Instructions are issued to one of his attendants to have her handed over to the head-chief's mother or one of his head-wives. If she is already betrothed the father is informed of the head-chief's instructions, from which there is no escape.

On arrival at the head-chief's compound all new women are taken to huts in the women's compound. Here they are instructed in various matters concerning marriage, and until they have cohabited with the head-chief they are under the strict supervision of the head-chief's mother or one of his head-wives. When the head-chief wishes to see a new woman the head-wife is informed, and instructed to make all arrangements.

The woman's body is covered with a wash of camwood powder and water; she is then attired in a girdle and pubic cloth (*nze āgoñ nda*), and a necklet of beads (*ma*).

In the evening she is taken to the head-chief's hut by a boy-attendant (*moñ kuu kwii foñ*), who leaves her at the entrance of the hut. After cohabitation the woman is known as *āgoñ ndā*.

When a woman, formerly betrothed to a man in the tribe, has a child, the head-chief gives presents of live-stock and palm-wine both to her former betrothed and father. Those to the former are called *nkaap tɔo mīngwi* and to the latter *nkaap tɔo tɛ moñ*. No presents are given if children are not born.

A woman presented to the head-chief by one of his subjects is called *foñ fūr ne me mīngwi*. To acquire the status of a head-wife (*niyo*) she must be freeborn, and have borne several children to the head-chief.

Marriage of the Head-chief's Daughter or a Relative.

When a daughter or relative of the head-chief is going to be married, a procession is formed at the compound of the bride's parents on the Bagam market day. About three o'clock, just when the market is in full swing and all the people are present, the procession appears on the ground. It is led by an attendant who is called *mbɛ*. He plays on a small iron double bell, and is followed by another attendant who plays the pluriarc. The proxies for the bride's mother and father come next; the latter wears a very large headdress decorated profusely with feathers (*ɛuo tɛ ɛpāñ*). They are followed by the bride, who is attired in the usual manner except that she wears a skin belt (*kɔo moñ ndā*) instead of the cloth or string girdle worn by other brides. A number of small girls and women complete the procession. All the women carry small grass bags on their left wrists, and as the procession moves through the market place various small gifts of food, etc., are placed in them by the assembled townspeople. Occasionally a halt is made, and one of the women splashes water on to the bride's breasts by means of a whisk made from a bunch of leaves. The water is carried by one of the women in a calabash. The procession never remains very long in the market place, but returns to the compound of the bride's father (*ndāp tɛ moñ ndā*), and in the evening goes to the bridegroom's compound.

Marriage of the Head-chief's Attendants.

At certain times the head-chief decides to change his younger attendants, and he issues orders that they make preparations to be married. The selection of eligible girls is made by the head-chief himself, not only from the townspeople, but from his own relatives. To a favourite he may assign a near relative. The outgoing attendants participate in a series of dances which are held on the outskirts of the head-chief's compound. These are called *mā tɛ*. As a rule the marriages take place about the time of the sowing of the new corn. During the waiting interval these young men may be distinguished by the manner of their preparation, as their bodies are usually smeared over with a mixture of palm-oil and camwood powder. During the interval of waiting the head-chief gave these men every opportunity for preparing their compounds and building new huts, so that they would not be delayed in taking up their occupations after marriage. During the time they

acted as boy attendants to the head-chief they were instructed in various trades, such as mat-making, brass-casting, iron-working, and so on.

The actual marriage ceremonies are exactly the same as those which have been already described.

SEPARATION.

In the event of a man and woman disagreeing, the matter is referred to the head-chief for settlement. If the dispute cannot be settled, then the head-chief may transfer the woman to someone resident either in one of his own sub-towns or else to someone resident in an outside town. Such a woman is known as *mīngwi ke poñ*.

Formerly an adulteress was sold in the open market, but no one in the tribe was allowed to bid for her. If it was one of the head-chief's women, then both offenders were killed in the market place, and their bodies buried on the outskirts of the town.

ILLEGITIMACY.

An illegitimate child must be cared for by the father, who must also pay a fine (*tsu nzo*) to the head-chief. The mother of an illegitimate child is called *mīngwi tsu ndā mie*. The head-chief stated that the *Eyāp* considered that it was a shameful thing for a child to be born before the parents were married.

IMAGES IN A WOMAN'S HUT.

A woman will not sleep in a hut in which there are figures of human form in wood or mud. The child's *m'bop* may cause it to be born in a form similar to that of the image. The interpreter said that the *m'bop* would argue: "If you are fond of these things then I will make pickin like it."

DEATH AND BURIAL.

When a person is believed to be dying, the relatives are called in and all gather round the bedside. When it is considered that he is about to die the body is placed on one side, and the nearest relative strokes the eyelids to keep them closed. In order to ascertain whether the man is dead, his body is placed on its back by his nearest relatives. One of them then holds his wrist and ankle until they "feel cold." Another places a hand over the region of the heart to note whether it has stopped beating, and the eyes are examined for any movement. When the relatives are satisfied that death (*apfo*) has taken place, they immediately make preparations for the burial.

The body is stripped of all clothing and washed. It is then covered all over with a mixture of palm-oil and camwood powder. After this it is attired in the deceased's finest raiment. If it is one of the head-chief's attendants, a cap is placed on the head. As the ceremonies of washing, anointing and clothing are being

performed, one or other of the relatives addresses the body and says what is being done at the time, in the preparation for the burial. In almost all cases burial takes place on the day of death. The grave is dug by men in the yard adjoining the hut. When it is time for the burial men take the corpse up and carry it out of the hut head first. Very rarely is any kind of covering used. Occasionally the body is supported by rope-carriers. Occasionally a coffin is used, but this is only of recent years. The Mohammedan custom of using a white cotton shroud is also not unknown, but the general practice is to bury the corpse without any covering whatever. The graves that I saw were about 4 to 5 feet in depth. If the deceased person had no official position in the town there is very little ceremony in connection with the burial. The corpse is laid in a reclining position, and sometimes the face is so adjusted that it is made to look at the opposite end of the grave. In some instances the body is laid down flat on its back, so that the face is looking upwards. The actual placing of the corpse in the grave is done by men. As far as could be ascertained, there was no special orientation, but in some cases the head is placed to the east. After the body has been put in position, all the relatives are called to see it. They sprinkle camwood powder over it, saying as they do so that it is for the benefit of the ghost of the deceased.

The grave is then filled in by men, the earth being stamped down by their feet. No mound is left and nothing is placed on the top of the grave. It is, therefore, very difficult to determine where the graves of the *Eyāp* are. Once buried a body is never exhumed, unless the whole town migrates. The remains of most of the former head-chiefs of the *Eyāp* were carried from their original home on the eastern side of the Nun river and were re-interred at the place where the present village of Bati is situated; and when the *Eyāp* proceeded to Bagam some of these remains could not be found. Hence in the ceremonies in connection with the ancestral cult visits are paid to some burial huts in which there are no remains.

Death of a Head-chief.

The body of a head-chief is prepared for burial by all of his immediate attendants (*mfōpēi*). The routine followed is the same as when one of his subjects is dying until his body is washed and anointed. It is then robed in his finest ceremonial clothing, including a chief's cap (*cuo foñ*) ornamented with porcupine quills (*ntsuā āgōp*), which is placed on the head and secured by means of a copper cap pin.

The body is then placed in a sitting position in a large cane chair; the elbows are elevated to a position level with the shoulders; the hands are placed on top of one another and drawn in towards the chin. In the left a chief's brass tobacco pipe (*ku'up foñ*) is fastened; and in the right a carved buffalo-horn drinking-cup. The knees are drawn widely apart, and in this position are tied to the chair. The body

is sprinkled with camwood powder and then taken to the sacred instrument hut (*ndāpāgōñ*) by all of the attendants when no one is about.

The burial of a head-chief does not take place on the day of death, but on the one following. After the body has been placed in the sacred instrument hut, the attendants assemble outside his compound and call out "*mā'o pu*" (a signal that all fires must be put out, because the head-chief is dead). This is the first official notification to the townspeople that their head-chief has died. As soon as his women hear this call, they clap their hands and commence to wail. Clapping their hands behind their necks, they roll about on the ground. Then they smear their bodies with ashes, crying out continually "*wumā yèi*." Later on in the day the body is removed from the sacred instrument hut and taken to a spot on the *izāñ foñ*, just in front of the burial hut of the attendant, whose ghost is supposed to attend to the wants of the former head-chiefs of the *Eyāp*. Here it is placed in such a position that everybody can see it. It remains here for a very short time only, and is then taken to the place of burial by all the attendants.

All the former head-chiefs of the *Eyāp* have been buried not far from the *izāñ foñ*; and all the burial huts are near each other.

The actual grave is prepared beforehand by attendants. No other person is allowed to take part in the burial ceremony of a head-chief. The body, still seated in the cane chair, is lowered into the grave by the five senior attendants. When *Foñ Kua*, the father of the present head-chief of the *Eyāp*, died, he was buried by the five senior personal attendants, *Mua na nzii*, *Fo messo*, *De moñ Kua*, *Taa feri*, and *Nde ta mfoñ*. From the latter the details of the ceremony were obtained.

After the body had been placed in position in the grave a clay tube was placed in position, one end resting on the top of the head, and the other reaching to the level of the ground.

The body was then well covered with a sprinkling of camwood powder; whistles made from the tips of antelopes' and goats' horns were then sounded, and the earth was shovelled in. Guns were also fired as this was being done. A hut was built over the grave as soon as the body was buried, in such a way that the grave was in the south-eastern corner. An inverted clay bowl was then placed over the tube opening just referred to, and the attendants left the hut. One of the townsmen was appointed as an attendant to look after the hut; and it was his duty to keep it clean and to make all the preparations for the *zapoñ* ceremony.¹ The late head-chief's attendants took it in turn to sleep near this hut for a period of about two months. A short time after the burial a goat was slaughtered over the grave, and the blood was allowed to flow down the tube and was sprinkled about the place where the inverted pot usually lay. The liver of the animal was chopped up finely, mixed with palm-oil and then dropped down the tube. Afterwards koko-yams, dried fish, salt and palm-wine were put down the tube and around its mouth. As this

¹ The first of a series of ceremonies in connection with the ancestral cult.

was being done, the ghost of the head-chief was asked to use all his influence to make the crops produce plentifully and the women to bear children.

The newly-elected head-chief, whose identity was as yet unknown to the townspeople, sent a supply of food for the use of the attendants who had been on duty at the burial ceremony. When he had been informed that the ceremony was completed, he ordered these men to go to the *izāñ foñ* and announce the election of the new head-chief.

During the period of mourning the attendants smeared their bodies with ashes, which were not washed off until it was over. This period lasted about a month, and a group of the townspeople attended outside the late head-chief's compound to wail. For the first week or so the wailing was to be heard during the day and night.

Burial of the Head-chief's Grandmother.

This woman died on the 18th of October, 1917, and I was permitted to view part of the burial ceremony. After death had taken place, her body was washed and sprinkled all over with camwood powder. It was then attired in several native cloths (*nɛ ci*) by some of the head-chief's women. After this had been done a very large fire was made in the centre of the hut, which is not very far from the head-chief's quarters. All the relatives then entered the hut and sat down in complete silence. Later on the same evening the body was placed in a rough wooden shell (*nɛkut*), and the whole was afterwards covered with a large native-made cloth (*ndɛ ndāp*). The next day the body was carried in the shell by some of the head-chief's attendants to the compound of one of her nephews, who is called *Taa feri*. As only the children of the head-chief are allowed to be buried in his compound, all other relatives must be buried elsewhere.

About three o'clock in the afternoon the body was taken to a grave already prepared in *Taa feri*'s compound, and the interment took place in the usual manner. As the earth was being shovelled into the grave, the head-chief, who was accompanied by his attendants, blew loudly on a horn whistle (*ncē ncē*). At the same time, all the women present called out in a high shrill manner (*yuēdi*). The men sang their chant (*izp*) of "W-ω-ω-ω-ω." This lasted for about five minutes, and the order was then given to fill the grave right up to the surface level of the ground. As this was being done, the head-chief blew repeatedly on his horn whistle. When the earth had been levelled off, he then stamped on top of the grave, first with the right and then with the left foot. Immediately afterwards he left for his own compound accompanied by his attendants. All the women and several of the men remained to wail beside the graveside. Palm-wine was distributed by the deceased's nephew to all of them, and was drunk from the open palms or else from horn drinking-cups. After the ceremony was over, the head-chief appointed another of his women to act in the place of the deceased, and to perform any duties which had been undertaken by her.

Burial of one of the Head-chief's Children.

One of the head-chief's sons died whilst I was in Bagam, and I was allowed to witness a part of the ceremony. The body was prepared for burial in the usual way, and the actual burial took place near the head-chief's quarters in a very similar manner to that which has just been described for the head-chief's grandmother.

Before the interment took place a number of the head-chief's attendants assembled in one of the huts to the north of his living quarters. Some of them played a small humming instrument called the *uyā*. After great difficulty I was able to secure one of them. It consists of a small hollow reed, which is covered at one end by a piece of the membrane of a bat's wing (Fig. 1 *a*). This is fastened by means of beeswax to one end of the reed. It is played by placing the open end in the mouth and singing into it. Other men danced inside the hut and clashed their

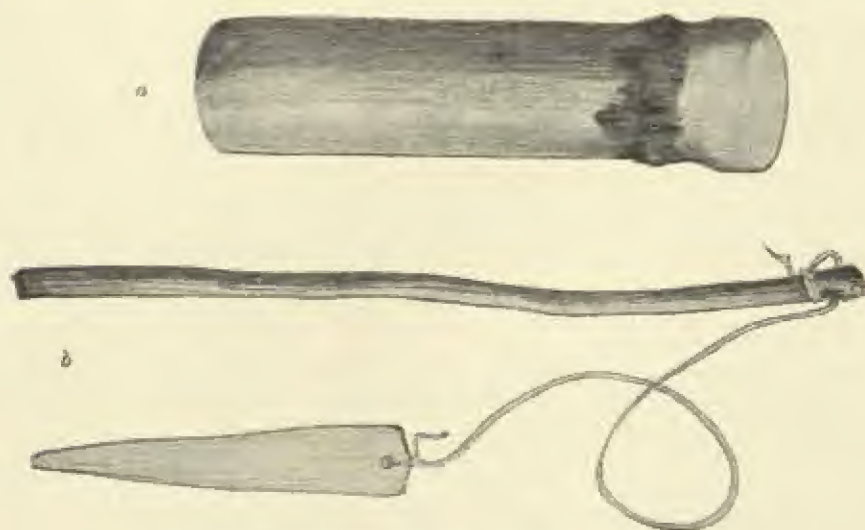


FIG. 1.—*a*. HUMMING INSTRUMENT (*uyā*). NAT. SIZE.
b. BULL-ROAKER (*ūgā muñ mo*).

sword-knives together. Every person in the hut was chanting with the exception of the *uyā* players. Outside the hut a man wearing a headdress decorated with cowry shells and with rattles around his ankles was dancing. In his right hand he carried three spears which he continually flourished.

This ceremony lasted well into the night, and the performers then returned to their quarters.

Burial of one of the Head-chief's Attendants.

This ceremony is the same as for the ordinary townspeople, except that at the graveside a goat is slaughtered. The blood is allowed to flow over the ground above the grave, and near its sides. What happened to the flesh could not be ascertained.

Burial of Skulls of Members of the Eyāp Tribe who were Murdered at Bamesso.

One of my duties while I was stationed at Bagam was to recover the skulls of certain of the head-chief's attendants who had been murdered by the sub-chief of Bamesso. After some difficulty these were recovered and handed over to the head-chief. In nearly every case he said he was able to identify them by means of the condition and deformation of the teeth. After he had taken them to his quarters they were handed over to their relatives for burial. Preparations for their interment were made the same day; sounds of wailing were heard from all quarters of the town.

Towards evening the interment took place in various compounds, and friends from all parts of the town participated in the burial ceremony. The actual burial did not differ materially from those that have been already described, with the exception that a great number of guns were fired as the earth was being shovelled in. Also the murdered men's clothing was buried with the skulls. The wailing commenced as soon as the grave was filled in, and lasted for three days.

In the evening the head-chief sent me a message to say that there was to be a dance at one of the graves. Here there were a number of the townspeople assembled; the women were sitting on the ground as they wailed. After the arrival of the head-chief, a dance was commenced in the cleared space in front of the huts. The dance was a circular one in which the performers moved in an anti-clockwise direction. The steps were very simple, the first being taken with the right foot, and then the left was brought up parallel with it. As they moved round the men sang; occasionally one or more would run into the middle of the ring and flourish his weapons, or else discharge a gun. Outside the ring a small group of men made mimic warfare with a great flourishing of spears and clashing of sword-knives. Sometimes the head-chief would lead a chant in which all the good qualities of the deceased were extolled, and the rest of the dancers would respond in chorus.

This dance lasted well into the night, and it was early morning before the players dispersed to their homes.

Burial of a Person who has Committed Suicide.

On the death of her husband a wife will sometimes commit suicide (*miñgwi kuri me*) by hanging. The head-chief informed me that in all cases the bodies of persons who had committed suicide were not buried in the compounds, but on the outskirts of the town.

COMMEMORATIVE CEREMONIES FOR THE DEAD.

Ŋge ŋgōñ.

This is a dance which is held at the grave of a relative some time after burial. After assembling at one of the compounds, a procession is formed which makes its way through the main roads of the town. The central figure is the *ŋgyi ŋge ŋgōñ*.

This is a man who is clothed in a nondescript garment made from a coarse native-made cloth decorated very liberally with cowry shells. He is attended by a number of other men, who are garbed in a variety of costumes. Some wear a rough covering of leaves (*Ficus* sp.), and others wear a network body cloth, with a cloth loin cloth. As they move about they sing and dance. The instruments played include a drum (*ifāp āge āgāā*), a basket rattle (*mba āgūp*) and a rasp instrument of raphia palm branch with notched sides. The latter (*kugo*) is played by running a piece of wood or iron up and down these notches, producing a stridulant sound. When the burial place is reached these players sing and dance for a while, and then return to their compounds.

The same night a party of men go through the streets swinging a bull-roarer (Fig. 1 b). This is called *āgū muā mo*, and I was informed that no woman is allowed to see it. They must go into the bush if they hear it near at hand. It is played by certain men from one compound and no one else is supposed to use it.

Nzāu āgāā.

One market day a party of men were seen attired in a manner somewhat similar to those who took part in the *āge āgāā* ceremony. They were engaged in dancing in the centre of the market place before all the assembled townspeople. They performed all manner of absurd dances and postured in all sorts of ways. The object of this, so I was informed, was to make the people laugh.

About three o'clock in the afternoon another party of men and boys came down the main thoroughfare. They were dressed in the same manner; and in all their action there was a gross exaggeration. Some of the men had bunches of leaves (*cuu nokāā*) suspended from their waist-cords. Their bodies were smeared with ashes and their faces with charcoal. As in some other ceremonies performed by the *Eyāp*, these players walked in a peculiar stilted manner, sometimes breaking into a run in order to make spear play, or clash the sword-knife with that of another performer. All other people on the road had to move to the side as the band passed; and women ran into the bush as soon as they saw it.

This particular ceremony was to commemorate the death of one of the head-chief's sons, and that was the reason that small boys participated in the ceremony.

WAILING.

The place of wailing for the dead is close to the hut in which the body of the deceased is lying. The relatives and friends of both sexes sit down on the ground and cry out "*Wō-ō-ō-ō ye-e-e-e*," if it is a woman who has died. Tears (*ntse mū*) are forced to flow by squeezing the eyes very tightly together, and in a short time they flow down the cheeks making furrows on the ashes which had been smeared on the face at the time the deceased died. Soon after the wailing commences some of the mourners rise and form a circle. They then walk round slowly in an anti-clockwise direction. The hands are placed on the shoulders of the person in front.

One of the men or women will call out the virtues of the deceased and all the others will respond in chorus. There seems to be no doubt that in the majority of cases the grief is real and not assumed.

SIGNS OF MOURNING.

After the death of a relative all the members of the family shave their heads by means of a locally-made razor (*kutw*). Ashes are then smeared all over the body, and they are not washed off until after the burial.

As signs of mourning, cowry shells are sewn to a part of the clothing; the women wear a waist-cord (*zei wō*), and the ends which hang down at the back are ornamented with a number of cowry shells. Both men and women carry a small patterned grass bag (*si*) as a sign of recent bereavement.

*Research Committee for the Archaeological Exploration of Derbyshire Caves.
(Royal Anthropological Institute and British Association.)*

REPORT No. 2.

EXPLORATION OF HARBOROUGH CAVE, BRASSINGTON.

[WITH PLATE XXII.]

By A. LESLIE ARMSTRONG, F.S.I., F.S.A. (Scot.).

*With a Report on the Animal Remains by J. WILFRID JACKSON, M.Sc., F.G.S.,
Assistant-Keeper of the Manchester Museum.*

THIS cave, known locally as "the Giant's Cave," is situated at an altitude of about 1,200 feet O.D. on the south-west face of Harborough Rocks, a series of rugged crags of Dolomitic Limestone lying three-quarters of a mile due north of Brassington and three miles W.N.W. of Wirksworth (Ord. Map 1-inch scale, Sheet III).

PREVIOUS EXCAVATIONS.

A portion of the cave was examined in 1907 by Mr. Storrs Fox, M.A., F.Z.S., of Bakewell, and described in the *Proceedings, Soc. of Antiq.*, II, S. XXII, p. 129. Two definite layers of occupation were determined, the lowest ("First Floor") lying immediately upon the yellow sand forming the substratum of the cave, and is stated to have yielded only a few flints and fragments of rude pottery.

The upper (termed "Second Floor"), consisting of from 12 to 18 inches of burnt stones, earth, and charcoal, was rich in relics, and yielded iron weapons, gold rings, brooches, including four of bronze, one being a magnificent example with coral, which is fully described and discussed by Mr. Reginald A. Smith, F.S.A. Bone needles, awls, spindle whorls, and a weaving comb were recovered, also a few evidences of occupation in Roman times.

The bulk of the finds were referred to the early Iron Age, a few to the Bronze Age, or possibly late Neolithic times, the sole traces of an early occupation being a quartzite hammer stone and a perforated hyena tooth, the latter considered to belong to a palæolithic stratum.

THE RECENT EXCAVATIONS.

Several preliminary examinations of the unexplored portion of the cave having been made in 1920-21, definite excavations were undertaken by three members of

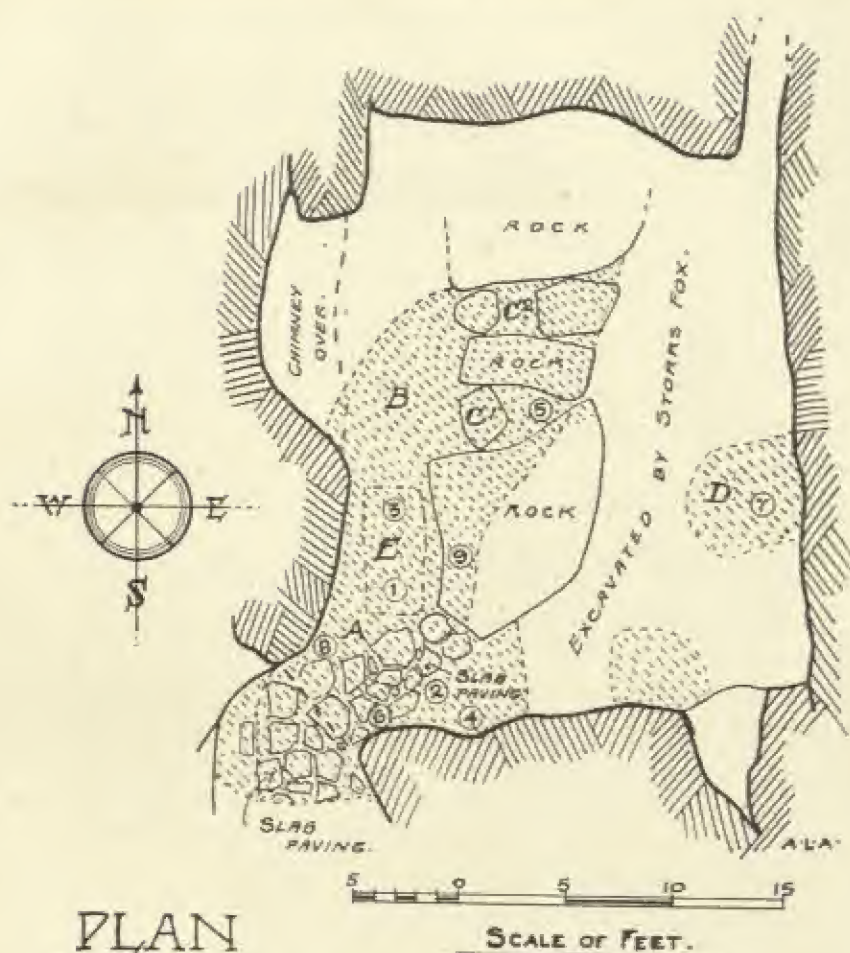


FIG. 1.—PLAN OF HARBROUGH CAVE.

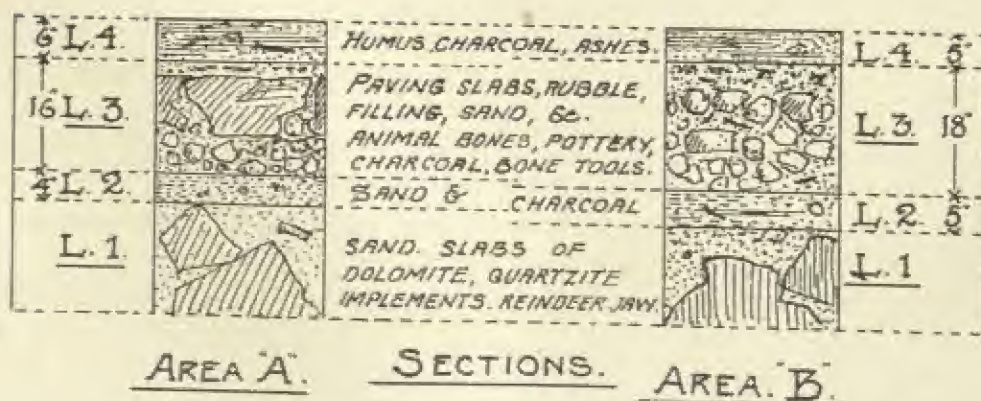


FIG. 2.—TYPICAL SECTIONS OF FLOOR.

the Cave Committee in September, 1922, with the object of supplementing Mr. Fox's work and, in particular, searching the lower stratum of the cave for further evidences of Palæolithic occupation.

The cave consists of a rectangular chamber approximately 20 feet by 30 feet by 9 feet in height, with a lofty entrance at the south-west corner, evidently much enlarged in comparatively recent times. (Pl. XXII (1).)

Like most Derbyshire caves it owes its origin to water action and seems to have been originally a portion of one of the huge "pot holes" characteristic of limestone areas.

In this instance the roof of the wide bell bottom of the pot appears to have fallen in and resulted in the formation of a chamber higher up the funnel. The funnel being on the north side very near the face of the cliff, and the rock much fissured, the formation of the chamber tore away a portion of the cliff face and thus revealed the presence of the cave.

No remains were found which suggest that the cave was ever the den of wild beasts. Probably it was difficult of access and not completely exposed before the close of Neolithic times, and the earliest occupants were hunters who used it only as an occasional camping place.

They must have found the floor a chaos of great limestone slabs fallen from the roof. The funnel of the old pot hole would form an outlet for the smoke, and the cave, being comparatively dry, though badly lighted, would offer a desirable and safe retreat.

About the fourth or third century B.C. it appears to have become a place of permanent habitation. With infinite labour tons of loose stone, etc., were carried into the cave, the inequalities of the floor filled up, and the level raised to that of the great central slabs of fallen limestone. In places this artificial platform was 2 feet thick. Probably it was at this time that the entrance was enlarged to about its present size—4 feet by 7 feet—not a difficult operation, on account of the natural fissures in the rock. (Pl. XXII (1).)

DESCRIPTION OF THE LAYERS.

The area dealt with in 1922 included an important section of this levelled area, termed Layer 3. Immediately inside and for some distance outside the entrance, the floor was found to be paved with slabs of stone, some of which measured 24 inches by 18 inches by 9 inches. This paving extended 4 feet wide on the inside as far as the fallen roof blocks, rendering the floor practically level therewith. (Plan, Fig. 1 at A section; Fig. 2, area A.)

Examination of the central area of the cave proved that what appeared to be two large fallen roof blocks were in reality five, the interstices of which had been filled in with slabs, loose rubble and sand, closely packed and levelled (Pl. XXII (2)). The removal of this filling led to the recovery of several interesting relics throwing light

upon the period during which the work was done. Fox, speaking of his examination of the N.E. corner, refers to certain levelling operations having taken place there, and suggests that at least some of this was attributable to the people who trod his Second Floor, a fact which the recent work has established.

The materials used in the levelling of the floor were such as the immediate vicinity of the cave would afford. Fragments of limestone, sandy humus, and yellow dolomitic sand. Opposite the entrance, at "A" on plan (Fig. 1, and Fig. 2, Area A), the thickness was 8 to 14 inches, measured from the surface of the paving downwards, the paving being covered by a layer of stiff black clayey humus, containing ashes, charcoal, recent remains, and, near the bottom, sherds of Romano-British and Iron Age pottery. The interstices of the paving blocks contained red clay, fragmentary animal bones and teeth, sherds of pottery, bone tools and numerous bones of frogs and small mammals.

The filling occupying the spaces separating the fallen slabs in the centre of the cave (C1 and C2 on plan) averaged 18 inches in thickness and consisted mainly of small angular rubble, sand, and red clay; very black in the upper portion and full of charcoal, bone splinters, teeth and fragments of pottery. (Pl. XXII (2).) This layer extended westwards ("B" on plan), but towards the wall had been cut through and partly removed during the earlier excavations.

Human remains, principally of the hands and feet, vertebra, teeth and fragmentary portions of skull, were found throughout every area examined. Some of these bones showed clear traces of fire and a sensational theory of cannibalism might have been built thereon, but as the work proceeded it became evident that the remains had been imported into the cave in the levelling material, and that they probably represent ancient burials disturbed in obtaining it. This accounts for the absence of large bones, which would naturally be rejected.

Sir Arthur Keith has pointed out that some of the bones indicate that the individuals represented suffered from rheumatoid arthritis.

This paved and levelled area, termed Layer 3 (The "Second Floor" of Fox) formed, when undisturbed, a clearly defined stratum, and served to differentiate the relics contained in the layer beneath. The latter, termed Layer 2 (First Floor of Fox), was a well-marked though thin layer, varying from 1 to 4 inches in thickness, occurring over limited areas, indicative of occupation at intervals perhaps widely separated in point of time. It consisted of the dolomitic sand comprising the substratum of the cave, discoloured by charcoal and wood ashes and was burnt to a brick red where fires had been lighted. It yielded flint flakes and scrapers, coarse hand-made pottery and bone tools, together with fragmentary bones and teeth of domestic animals and deer.

LAYER 1.

This represents the substratum of the cave, consisting of very compact dolomitic sand, light yellow in colour, and apparently introduced by water.

enclosing a jumble of massive slabs and angular fragments of dolomite tightly wedged together, the whole evidently derived from the roof by successive collapse of the horizontal beds lying between two main joints running due north and south.

The layer was carefully examined to a depth of 12 inches over the whole area explored and yielded scanty but important remains of early occupation. At "E" on the plan (Fig. 1) an excavation 6 feet by 3 feet was made, with considerable difficulty, to a total depth of 3 feet 6 inches, but proved absolutely barren beneath the first 12 inches and revealed no indication of occupation, animal or human.

The upper portion of Layer 1 contained numerous fragments of highly mineralised animal bones, teeth of pig (probably derived from Layer 2), and at a

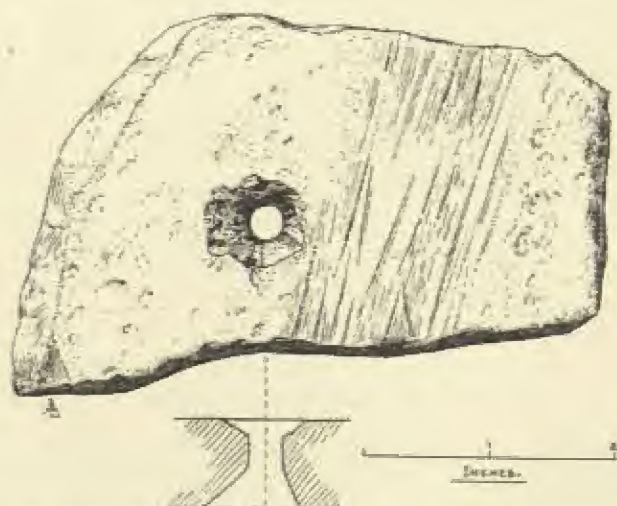


FIG. 3.—GROOVED AND PERFORATED SANDSTONE SLAB, $\frac{3}{4}$ -IN. THICK, FOR MANUFACTURE OF BONE PINS, &c. LAYER 3.

depth of 8 inches at (1) on plan, fragmentary bones and part of a jaw, containing teeth, of Reindeer (*Rangifer tarandus*).

Whilst it is possible that these may have been introduced by water action, the appearance of the bones does not support that view and suggests fracture by human agency.¹ This is rendered more probable by the discovery in the same layer of bone tools and of two split quartzite implements of the type found in considerable numbers in Creswell Caves. The largest (Fig. 4) is a scraper, oval in shape, 3 inches by 2 $\frac{3}{4}$ inches, with edges chipped and showing signs of use, the smaller is a triangular quartzite flake slightly trimmed.

In the report of Fox's excavations a hyæna tooth, pierced for suspension, and a quartzite hammer stone, are described by Mr. Reginald A. Smith, who states that

¹ See accompanying Report on the Animal Remains, by J. Wilfrid Jackson.

the former "must belong to a palæolithic stratum, and was perforated for use as a pendant, perhaps by a contemporary of the animal in this country." The hammer-stone, he says, "resembles specimens from known palæolithic sites." Taken in conjunction with recent discoveries, we appear to have conclusive evidence of a temporary occupation of the cave in palæolithic times, and consequently of man's presence in that period further to the north-east than has hitherto been recorded in Derbyshire. The evidence is further strengthened by certain rude bone implements of a type not previously recorded, which have been termed "marrow scoops" (Fig. 5). These occurred on, or near, the top of Layer 1 (one or two being on the same horizon as Fig. 4), but were at first assigned to Layer 2. The bone, however, of which the implements are composed is in colour, mineralisation, smoothness and polish comparable only with the reindeer jaw and splinters of bone



FIG. 4.—QUARTZITE SCRAPER. LAYER 1.

contained in Layer 1 and entirely different from those properly belonging to Layer 2. It seems probable that they are more correctly referable to the period of the early occupation, a view which is supported by the discovery of precisely similar implements in the late palæolithic stratum of "Mother Grundy's Parlour," Creswell, explored by this Committee a few months later. The implements consist of fragments of bone split longitudinally, and having one end triangular, which is generally blackened by use. The blackening is such as would result from frequent contact with hot fatty matter, and the form an effective one for removing marrow from a split bone.

RELICS FROM LAYER 2.

The finds here were not numerous, and, in view of the casual occupation which the layer represents, are most likely widely separated in point of time. Burnt stones, bones split and partly burnt, and teeth of animals occurred throughout the layer.

One or two human teeth, much worn, were also found. The only datable object is a small fragment of "Beaker" pottery. Others, of coarse hand-made ware, bear a pattern which seems to resemble that of Neolithic pottery from Peterborough. (Pl. XXII (3) *a* to *e*.) Sherds of coarse domestic ware are probably of Bronze Age date.

Flint Implements were represented by two round scrapers, flakes of flint and of grey chert, the latter of local origin, and such as can be found *in situ* within a mile off the cave. The flint is mostly of the grey chalcedonic variety, so freely imported into Derbyshire in prehistoric times, the actual source of origin of which can only be conjectured. Two broken implements from near the bottom of the



FIG. 5.—BONE TOOLS, TERMED "MARROW SCOOPS," FROM LAYER 1.

layer are pieces of long blades, and bear a thick porcelaneous patina. As the remainder of the flints are only faintly flecked with patina, these pieces are distinctive, and as they differ equally in the quality of workmanship they probably belong to the period of Layer 1.

Bone Tools.—A small pricker, 2 inches long, Fig. 7, formed out of a splinter of bone by rubbing down to a sharp point upon a stone, occurred at (4) on plan. A similar tool, but only partly shaped, was found a few feet distant.

Bronze.—A thin plate of bronze, much corroded and about $\frac{3}{4}$ inch square occurred at (5) on plan.

RELICS FROM LAYER 3.

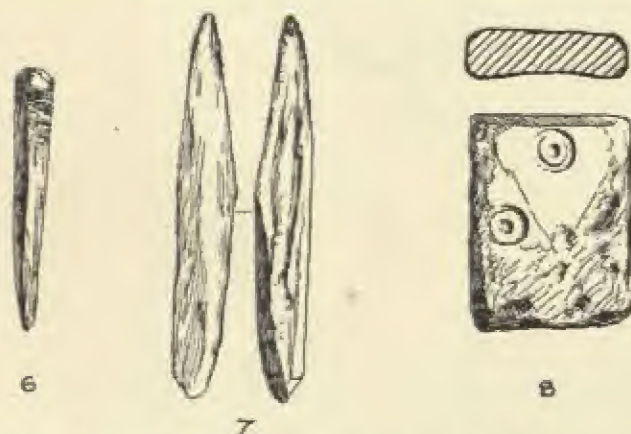
This layer was more productive, especially in pottery. Burnt stones and animal remains were abundant. The presence of human bones has already been

referred to. A feature of the layer was the frequency of pebbles of quartzite, ranging in size from an acorn to a lemon. All are imported, and must have been carried to the cave from the valley, where they occur abundantly in isolated patches of Triassic (?) sands.

Their purpose is not evident, though some at least appear to have done duty as pounders, and a few as pot boilers. The presence on living-sites of the late Bronze Age, or early Iron Age, of pebbles of this nature foreign to the site has been noticed elsewhere,¹ but no satisfactory explanation has so far been given. Over 100 were found in Layer 3, and of these only five bore signs of use. Numbers are to be seen in the *débris* from the earlier excavation at the back of the cave.

Flint.—Only a few rough flakes.

Bone.—A piercer, or pin, $1\frac{1}{4}$ inches long, rubbed down and polished (Fig. 6). The fine striæ of the rubbing process are clearly visible and are such as the slabs



FIGS. 6, 7, AND 8.—BONE TOOLS. LAYERS 2 AND 3. (4.)

of gritstone found, and described below (Fig. 3), would produce. A groove, deep enough to secure a thread, encircles the implement near the head. Found at (6) on plan.

A rectangular object of bone, 1 inch by $\frac{3}{4}$ inch by $\frac{1}{8}$ inch thick may represent a counter used in a primitive game. It resembles half of a modern domino (Fig. 8) and was found 8 inches deep in the crevice at C2 on plan (Fig. 1). It is damaged by fire at one end, the remainder of the surface is polished and the edges neatly rounded. The upper face bears four "ring and dot" spots, arranged on the diameters and has been roughly scored across diagonally.

A piece of split bone, 1 inch wide, sawn at one end and with two abortive saw cuts across the width. The cuts appear to have been produced by a metal tool, and the groove is $\frac{1}{16}$ inch wide.

¹ Armstrong. *Proc. P.S.E.A.*, vol. iii, Pt. IV., p. 549. Also found on Traprain Law, Scotland.

Stone.—Several hammer stones, pounders and rubbers, of the usual form, were recovered, also four rectangular pieces of smooth grained red sandstone, each about $2\frac{1}{2}$ inches by $2\frac{1}{2}$ inches by $1\frac{1}{2}$ inches, which had done duty as whetstones. These originally formed one slab, but had received different degrees of use after cutting up.

The most interesting find in stone is a small rectangular piece of red sandstone, $\frac{3}{8}$ inch thick, perforated at one end, and with patches of the surface on both sides rubbed and grooved (Fig. 3).

This is evidently an implement used in the manufacture of bone pins,¹ so many fine examples of which were found by Fox in the same layer. The perforation has

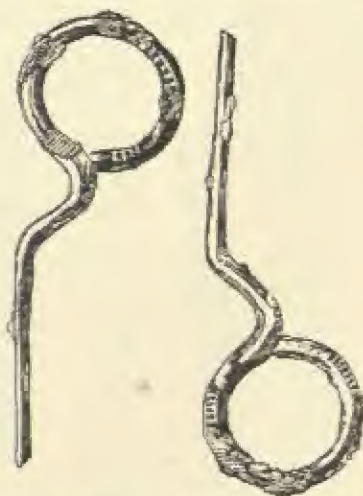


FIG. 9.—BRONZE HAND PIN. LAYER 3. (1.)

been produced by pecking with a pointed metal tool, and mostly from one side (that illustrated). It is of hour-glass section $\frac{3}{4}$ inch wide on one face, $\frac{1}{2}$ inch on the other, and measures $\frac{5}{10}$ inch in the necking, which is rubbed smooth and slightly grooved, by contact with the pins. It was found 6 inches deep at (7) on the east side.

Another similar but unperforated piece of stone is deeply grooved on one side.

Glass.—At (8) on plan, 15 inches deep, a cylindrical bead of dark-blue glass, opalescent on its surfaces, was found, and also a globular piece of similar glass, the size of a pea, which may have formed a setting to a brooch or ring.

Bronze.—The most important find for dating purposes was made by Dr. R. V. Favell in one of the preliminary examinations of the cave, and consists of a hand-pin of a rare, though well-known, type (Fig. 9). The shaft, which is broken, is of round wire thickening out at the neck and gradually becoming of lozenge section, which

¹ Ludovic M. Mann. "Perforated Stones of Unknown Use." *Trans. Glasgow Arch. Soc., N.S.*, Vol. vi., Pt. I., VIII.

continues around the head of the pin, and is enriched with ornament in short incised lines, regularly spaced. The patination is dark green and the weight is 10 grammes.

This is practically identical with an example from the Hammersmith pile-dwelling figured by Mr. Reginald A. Smith, F.S.A., in his paper upon the "Evolution of the Hand Pin in Great Britain and Ireland,"¹ and referred to the fourth-third century B.C. The author states that from the British evidence alone this type of pin "can with some confidence be assigned to that part of the Early Iron Age known as La Tène I, whether executed in bronze or iron wire."

The pin was found in a cavity of the central block, 6 inches deep, at (9) on plan in the filling and near the base of it. It therefore serves to date with some precision both the period of the levelling up of the cave floor and also the rare bronze brooch, set with coral, found by Mr. Fox,² which from its general character was assigned by Mr. Reginald Smith to the La Tène period.

Associated with the hand-pin were a few fragments of thin bronze plate too much corroded to be determined.

At C1 on plan, at a depth of 8 inches, was found what appears to be a portion of a dagger sheath of thin bronze, broken at the tip, much corroded, and devoid of any ornament.

Iron.—A few pieces were recovered, chiefly nails or of unrecognisable form.

POTTERY.

Layer 3 was particularly rich in pottery. Excluding sherds from the base and from the surface of the layer, seven different wares were found in association with the La Tène I hand-pin, which may reasonably be considered as contemporary in date. The pieces are mere fragments, but include examples of rims and bases, and fall into two main groups.

Group 1 is the well-known polished black ware of the period and includes a sherd bearing the faintly traced trellis pattern, an ornamental feature which continues on black wares down to late Romano-British times. Three varieties are represented (*a*, *b*, *c*) and four types of rim. All are hand moulded.

- (*a*) Polished black exterior, red on inside and in section. Paste of fine texture and thin. Rim slightly curved outward. (Fig. 10 (1).)
- (*b*) Polished on exterior, grey-black inside and out. Paste thin, hard and contains more grit than (*a*). Rim formed by incipient bead on exterior. Grey in section. Trellis ornament. (Fig. 10 (2), Pl. XXII (3)*f*.)

¹ R. A. Smith in *Opuscula archaeologica Ossani Montelio dicata* (1913), p. 281, fig. 2c.; cf. *Proc. Soc. Antiq.*, xx., p. 345.

² *Proc. Soc. Antiq.*, xxii, 142, fig. 19.

- (c) Dull black unpolished ware. Thick, coarse, hard paste containing spar and grit. Black outside and bears finger prints. Grey inside and section. Two types of rim, one unmoulded but thinned out and flattened on top (Fig. 10 (3)), and the other with bead on external face (Fig. 10 (4), Pl. XXII (3) g).

Group 2.—Coarse domestic pottery, vessels of large diameter, hand-moulded, and with finger prints and streaks on surfaces. Well burnt. Four varieties represented, including a rim and base. (Fig. 10 (5).)

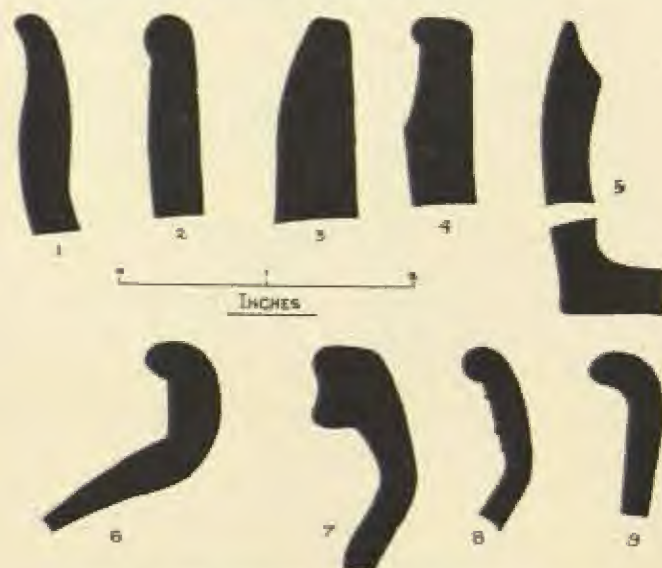


FIG. 10.—SECTIONS OF POTTERY. LAYERS 3 AND 4.

- (a) Polished brown ware, in texture and paste resembles the polished black (a) ware, colour probably due to different treatment in the burning process.
- (b) A coarse moderately thick ware, brown to red outside, black inside and in section. Contains large quantity of grit in small grains.
- (c) Coarse partially polished ware, brown in colour outside and in. Thinner and finer quality of paste than (b). Grit not conspicuous. Rim concave, formed by thinning out abruptly from inside face. (Fig. 10 (5).)
- (d) A thick, coarse ware, part of very large pot. Cream to white outside, grey inside, surface smooth, paste black in centre, fine and almost free from grit.

Group 3.¹—Ornamental pottery of four types (Pl. XXII (3)), both being hand moulded, red in colour and of paste resembling Group 2 (a). All the fragments

¹ This Group, particularly (a) and (b), recalls Neolithic examples from Peterborough, more especially Mr. Leed's Group 6 (a), *Antiq. Jnl.*, vol. 2, 226, Fig. 6.

were derived from crevices of the great floor slabs, or from the junction of Layer 3 with Layer 2, and may rightly belong to the latter.

- (a) Is a partially polished ware with four concentric cord impressions and a chevron band over, formed by the impression of a narrow oval-shaped implement with a denticulated edge. Black medium paste, no large grit, pale red on outside. (Pl. XXII (3) *c* and *d*.)
- (b) Is less refined in design, the ornament more freely applied, and such as a pointed bone tool would produce. (Pl. XXII (3) *a*.)
- (c) and (d) are thin wares resembling (a) bearing irregular parallel cord impressions. (Pl. XXII (3) *b* and *c*.)

A single fragment of polished black ware, part of a well-formed rim of a shapely vessel, was found in a crevice between two of the paving slabs in the doorway. It is of finer finish and better paste than any of the other pottery, and is either part of an imported vessel or rightly belongs to Layer 4. (Fig. 10 (6).)

MISCELLANEOUS FINDS.

Layer 3 and the lower portion of Layer 4 yielded numerous pieces of red oxide of iron, in pieces the size of a penny up to that of a Brazil nut, and in the former layer a piece of smelted lead weighing $1\frac{1}{2}$ oz. was recovered.

Layer 4.—This formed the surface layer, and had been in places disturbed in previous excavations, or entirely removed. The thickness was 4 to 6 inches, and the contents ranged in date from Romano-British to modern. Several fragments of good Roman pottery and Romano-British wares were recovered (Fig. 10 (7, 8, 9)), also iron clout-headed nails and two large pieces of a hand millstone, of Millstone Grit, Roman in type. Mediæval pottery, and a knife haft of the same date, also fragments of glass and recent pottery, iron implements, etc., were found, none of which call for special mention.

A report on the animal remains and shells, by Mr. J. Wilfrid Jackson, M.Sc., F.G.S., is appended.

The sincere thanks of the Committee is tendered to Messrs. Swann, Ratcliffe & Co., of Matlock, for permitting this exploration of the cave and for their assistance to the members who carried it out, also to Mr. E. T. Lingwood for making the drawings of Figs. 4, 6, 7, 8, 9.

REPORT ON THE ANIMAL REMAINS FOUND AT HARBOROUGH CAVE, DERBYSHIRE.

By J. WILFRID JACKSON, M.Sc., F.G.S.
(*Assistant-Keeper of the Manchester Museum*).

THE animal remains found during the investigations of Harborough Cave in September, 1922, fall into two groups. One group consists entirely of domestic species comprising the Celtic ox, sheep, horse, and pig. Remains of these animals were found in association with the various objects described above by Mr. A. Leslie Armstrong. They belong to forms usually associated together in Prehistoric and Romano-British refuse heaps, etc.

The second group consists of the following wild species: Wild boar, roebuck and reindeer. These all come from a lower level (Layer 1) and belong to an earlier period than the first group. As in the first group, some of the bones, especially of the reindeer, have been split in the characteristic manner for the extraction of the marrow, or for the manufacture of bone implements. This (together with associated split quartzites) suggests that the cave was used for habitation or temporary shelter at some remote period.

In addition to the above two groups, I have examined a number of bones in the possession of Dr. R. V. Favell, of Sheffield. These were acquired from Mr. Storrs Fox, of Bakewell, and were obtained during the latter's investigation of the same cave from 1907 onwards. This collection contains an addition to the list in the form of the dog.

The following list of species contains some details of the various limb-bones, lower jaws, and teeth, and comparisons are made with similar remains found in other excavations which I have had the privilege of examining and reporting upon. The most important of these are the Glastonbury Lake Village (Somerset),¹ and the All Cannings Cross Village (Wilts).² Both these are of the Prehistoric Iron Age, the latter being somewhat earlier than the former.

At the end of this report a few remarks are given on some fragmentary human remains found in the cave; also on Molluscan remains.

THE DOMESTIC ANIMALS.

Dog (*Canis familiaris*).—The dog is represented by portions of lower and upper jaws, and by one or two limb-bones. Few measurements are obtainable owing to the fragmentary condition of the remains. They are, however, all quite typical

¹ *The Glastonbury Lake Village*, vol. II, 1917.

² *The Early Iron Age Inhabited Site at All Cannings Cross Farm, Wiltshire, 1923*, by M. E. Cunington (Mrs. B. H. Cunington) ("Report on the Animal Remains," by J. Wilfrid Jackson).

of the larger bones and jaws found at the Glastonbury Lake Village, and at All Cannings Cross, Wilts. The type of dog in all three places seems to be that of the Stone Age sheep-dog (*Haushund des Steinalters*) of Rutimeyer.¹ One of the Harborough bones (a *tibia*) is of interest from the fact that it has been broken during life and has re-united by overlap.

CELTIC OX (*Bos longifrons*).—Most of the bones belong to this animal. The 1907 collection comprises one or two limb-bones, a right ramus of the lower jaw, two incisors and two upper milk-molars in a fragment of jaw. Those found in 1922 consist of fragmentary bones, lower jaw, several upper and lower teeth (including milk), and the basal portion of a rather large horn-core. The latter is probably that of a male animal; the diameters of the core at its base are 74×45 mm. A few only of the limb-bones are capable of measurement, the majority having been split in the usual way to obtain the marrow. The remains agree generally with those from Glastonbury and All Cannings Cross, and are all of the small Celtic Ox type.

SHEEP (*Ovis aries*).—A few sheep remains were found during the 1922 excavations. These consist chiefly of skull fragments, lower jaws, teeth, and a few limb-bones. The remains, on the whole, are not sufficient for conclusions to be based upon them. They strongly suggest the race met with at All Cannings Cross and the Swiss Lake Dwellings, viz., Studer's Sheep (*Ovis aries studeri*), a type represented to-day by the almost deer-like sheep of Soay Is., near St. Kilda. The same type was present at Glastonbury, together with the goat-horned or "Turbary" race (*Ovis aries palustris* of Rutimeyer).

HORSE (*Equus caballus*).—The remains of this animal are too few for the discrimination of breed. In the 1907 collection there is only one lower incisor, and in the 1922 series one lower and one upper molar.

PIG (*Sus scrofa*).—Only a few remains referable to this animal were found during the 1922 diggings, but in the 1907 collection there are several lower jaws, loose teeth, and one scapula. Some of the jaws belong to young animals, and all are female. They are badly broken and but few complete measurements are obtainable. In general build they appear to belong to the "Torfschwein" of Rutimeyer (*Sus scrofa palustris*).² The same type occurred in some numbers at Glastonbury and All Cannings Cross.

WILD ANIMALS.

WILD BOAR (*Sus scrofa ferus*).—A solitary fragment—the upper part of a radius—seems to be referable to the wild rather than the domestic variety. It was found with reindeer-bones at a lower level in the cave (i.e. Layer 1).

¹ Rutimeyer, *Die Fauna der Pfahlbauten*, 1861, pp. 117–118, text-figs.

² Rutimeyer, *op. cit.*, p. 33, Pl. I, Figs. 1–3, etc.

ROEBUCK (*Capreolus caprea*).—A calcaneum, an astragalus, and a toe-bone are referable to this species. Like the last, they come from a lower level than the domestic forms.

REINDEER (*Rangifer tarandus*).—Two fragments of lower jaws with teeth, together with broken limb-bones, definitely belong to this animal. The splitting of the bones seems to suggest that this was done by man for the purpose of extracting the marrow, or for making bone implements. All the fragments are highly mineralised.

HUMAN REMAINS.

MAN.—In various parts of the cave scattered human remains were found during the 1922 excavations. These consisted of fragments of a humerus and of skulls, as well as teeth and bones of hands and feet. In the 1907 collection there are fragments of a humerus and a fibula. It is not possible to assign any definite date to these.

MOLLUSCAN REMAINS.

The following species were met with in the upper soil of the cave :—

Vitrea cellaria (4).

Helix hortensis (com.).

Pyramidula rotundata (1).

H. arbustorum (1).

Hygromia hispida (2).

H. lapicida (3).

Helix nemoralis (com.).



(1.)—ENTRANCE TO HARBOROUGH CAVE.



(2.)—LAYER 3, SHOWING ARTIFICIALLY LEVELLED PORTION.



(3.)—ORNAMENTAL POTTERY, LAYERS 2 AND 3.



THE ABABDA.

[WITH PLATE XXIII.]

By G. W. MURRAY.

THE Ababda inhabit the Eastern Desert of Egypt from the Sudan frontier to north of the Qena-Quseir road, and colonies of them also exist along the edge of the Nile Valley cultivation from as far north as Assiut to as far south as Korosko. An offshoot, the Meleik-ab, is settled in the Sudan in and near Berber; while a tribe, possibly of common origin, the Kawahla, possesses in Kordofan a subsection called Ababda.

The tribe derived prosperity in the past from the large carrying trade between Korosko and Abu Hamed, which the construction of the railway line has done away with; while the cutting of the Suez Canal, which allowed Black Sea wheat to compete with Egyptian in the Arabian market, had the effect of greatly diminishing the grain traffic on the Qena-Quseir road, which the Ababda share with the fellahin. The former pilgrim traffic on this road is now also a thing of the past. Some compensation has been afforded the Ababda by the growth of the mining industry in Egypt, which finds employment for their camels and some hundreds of their young men.

In late mediæval times the routes from Qus to Berenice and Aidhab may have been in their hands, and we may suppose them always to have been a more sophisticated race than the rest of the Beja are even to-day. Most of them, some thousands, live on the edge of the cultivation and only go into the desert, if at all, when their camels are hired.

In the time of Bruce, 1765, and the Comte de Noe, 1801, they ranged up to the southern Qena-Quseir road, where they lived in a state of perpetual petty warfare with the 'Aṭawna, a tribe of true Arabs. Nowadays the 'Aṭawna have vanished from the desert, and the Hamito-Semitic boundary might be drawn with a fair approach to accuracy from Qena to the Red Sea coast in Lat. 27° N., a gain of about 60 miles in a century. Makrizi records the Beli, an Arab tribe still found on the outskirts of the Egyptian cultivation, as inhabiting the deserts now possessed by the Ababda, and we may suppose this process of gradually pushing out the Arab invaders to have been going on for some centuries.

Like most nomad tribes, they are a confederation of families with common interests rather than of common origin, and neither history nor tradition helps

us very far towards ascertaining their true descent. All the tribes of the northern Sudan are anxious to claim kinship with the Arabs of the Conquest, and there is little doubt that the ruling families at least were once Arab. Traces exist here and there of Arab organisation, *e.g.* the raids of the Ababda and the Ja'alin used to be conducted by a professional soldier, the *aqid*, paid from the booty and not by the sheikh.¹

Of these tribes we know little but what Makrizi has to tell us.²

Quoting Masa'udi, writing about A.D. 944, he records the settlement of the Rabia Arabs in the Eastern Desert of Egypt, in the neighbourhood of the gold mines in the Wadi Alaqi, and also near Aidhab. He declares that the Rabia took in marriage the daughters of the Beja, and also gave their daughters to the Beja, in marriage. But there is some confusion in our author's mind as to who the Beja were, for he states that the Hadareb were the only Beja who had embraced Islam (and so presumably the only ones to aspire to the hands of the Rabia young ladies) while the infidel Beja of the interior adored an idol.

Now Hadar-eb, as pointed out by MacMichael³ is only a Beja name for the Hadarma, emigrants from Hadramaut in Southern Arabia, who had at an early date settled in and round Suakin. There is also a Hadrami colony at Lith on the Arabian coast opposite Suakin, while others have wandered as far afield as the Dutch East Indies. Such merchant adventurers as the Hadarma no doubt played a prominent part in this early Arab "gold rush."

It seems probable enough that the conquering Rabia, Juhayna, and other Arabs took wives from the Beja, as they did from the Nubians, and thereby, owing to the matrilineal system of succession in vogue among the Hamites, acquired control of the various tribes. To this period we may perhaps date the eponymous ancestor Abad, whose tomb is still shown in the Wadi Abad not far from Edfu. The Ababda of Shendi told Burckhardt a century ago that they were descended from one Selman of the Beni Hilal,⁴ but I have heard from them more recently that the father of Abad was Zubayr ibn el Awwam, also claimed as ancestor by the Kawahla.⁵

At the present day the desert Ababda intermarry commonly with the Bisharin, and those settled in the Nile Valley with the *fellahin*, and, according to Burckhardt, with the Kenus Barabra.⁶ Possibly these Nile Ababda also intermarry with Arab tribes long settled among the *fellahin*, as, for instance, the 'Aleiqat, though I have no information on this point; but, in twelve years' experience among them, I have yet to encounter or hear of a case of intermarriage between the Ababda and Arab

¹ Burckhardt, *Notes on the Bedouins and Wahabys*, vol. i, p. 299.

² Translation by U. Bouriant, Cairo, 1895.

³ MacMichael, H. A., *A History of the Arabs in the Sudan*, vol. i, p. 346.

⁴ *Travels in Nubia*, p. 345.

⁵ MacMichael, *op. cit.*, p. 324.

⁶ *Travels in Nubia*, p. 145.

tribes in which the desert Arab traditions still live, such as Ma'aza, Juhayna and Beli.¹

This absence of intermarriage would seem to indicate that the true Arabs look on the Ababda as non-Arab, and it has in any case resulted in the swamping of whatever Arab racial characteristics once existed in the tribe by the Hamitic. At the present day the slender and graceful Ababda of the hills strongly resemble the Bisharin, while those of the Nile Valley are often sturdier. Here a type which is common throughout the Northern Sudan is often met with.

Another circumstance that strongly distinguishes the Ababda from the true Arabs is that the desert sections of the tribe still wear the *dirwa* or shock head-dress of hair with a large wooden hairpin, plentifully besmeared with mutton-fat, as do the other Beja, the Bisharin, Hadendawa, Amarar, and Beni 'Amr. This custom is dying out, but in their traditions of wars with the Arabs of the north, often raiders from Sinai, the Ababda are always described as wearing the *dirwa*.² They tell how, in the last great battle between the 'Aṭawna and the Ababda in the time of Sheikh Abdulla el Derazi, perhaps one hundred years ago, an Arab raiding party was cut off as it retreated across the Qena-Quseir road northwards and perished to a man below the slopes of Jebel Mi'tig. A young Abadi had slain an Arab with a fine *kefiya* and *'uqal*, and mockingly donned the spoil. While he was admiring his appearance in the unwonted headgear, he was run through with a spear by another Abadi, who had only just come up. The unfortunate jester, unable to speak, tore off the *kefiya*, and the late-comer stood aghast that he had slain a comrade. Long years before that Rueishid, an *aqid* of the Tiaha who used to raid north to Tadmor and south to Quseir, was accosted by one of his wives, "Bring me an Abadi's head when next you go raiding! I want to see the *dirwa*!" "I will do better than that," he replied; "I will bring you a live one! Fifty of their spears will not pierce my *iḥb*!"

Pierce it they did, however, and Rueishid lies buried near the well that bears his name, three hundred miles from the Tiaha marches.

The *dirwa* was formerly worn by the Shaiqia³ and the Barabra,⁴ but it is unknown to the true Arabs. The *fellahin* near Qena look on the Ababda as partaking in some degree of the nature of *jinn*, and say that an Abadi when followed up into the desert vanishes from sight after going 200 or 300 yards. They can bring moving

¹ The Ma'aza occupy the desert to the immediate north of the Ababda, while the two other tribes have not long abandoned the desert for the edge of the cultivation, and still maintain communication with the great tribes of their name on the Arabian side of the Red Sea.

² Burton and Wilkinson, who travelled in 1822-23, describe the Ababda as wearing "long bushy hair like the Nubians," and carrying spears with which they transfixed even the mountain sheep. The Malaza wore turbans and carried no spears. *MS. diaries, British Museum.*

³ Hoskins, G. A., *Travels in Ethiopia*, illustration, p. 228.

⁴ Waddington and Hanbury, *Visit to Ethiopia*, frontispiece.

objects to a standstill, when at a considerable distance from them; and their glance is said to be very dangerous.

Nor do Abadi twins turn into cats at night as the *fellah* twins (and those of the Barabra) do. When asked slowly, "Enta Abadi—wala Muslim?" ("Are you an Abadi—or a Moslem?"), the incautious shockhead is often caught by answering "Abadi" too quickly; and great is the laughter at his thus revealing his ignorance of a religion which knows no nationality. This "catch" must date back to the times when the tribe had just been converted; perhaps not so distant. I have sometimes thought that the unusual prevalence of names of the Prophet and his immediate relations showed further evidence of fairly recent conversion. Almost every Abadi bears one of the three names—Muhammad, Aly, or Hasan. These names are very rarely heard among the Arab tribes of Sinai. Unlike their Beja neighbours to the south, the Ababda speak Arabic; but it is a dialect strongly marked by contact with To-Bedauye, and containing many Bedauye words. Transposition of consonants, a Hamitic rather than a Semitic symptom, often occurs; thus they say "ghardaq" (*Nitraria retusa*), "hawar" (*Hyrax*), for "gharqad," "wahr."

Many of the Ababda customs resemble those of the Kababish as described by Professor Seligman.¹ For instance, a man avoids his mother-in-law by not speaking to, touching, or eating in her presence. A very few avoid this prohibition by paying a fine of about 30 piastres to the mother-in-law. The mother-in-law's sister is not avoided in the same way. The father-in-law may be saluted by name by his son-in-law, but otherwise he is avoided, and though his daughter-in-law may speak to him, she does not eat in his presence. A woman does not avoid her mother-in-law.

The following relatives may not be addressed by name by an Abadi: father's brother, father's sister, mother's brother, father's father, mother's father. Further, among the Ababda of the hills a wife may not address her husband, nor a husband his wife, by name.

The best marriage a man can make is that with his father's brother's daughter, as among the Arabs, and he pays less for her than for another woman.

After marriage a bride remains with her own people a year or so that the first child may be born among them. She then joins her husband's people.

A man refers to the division of the clan to which his mother belongs as *lahma*, and that of his father as *'usl* or *'usla*. This latter division is helped when a sum of blood-money has to be raised, but this is not the case with the *lahma*.

Practice varies very much in Egypt as regards the proper persons to milk the herds. Among the Ababda and Bisharin men do all the milking, among the Barabra (Kennis) the women do it, while among the Arabs the men milk the camels and the women the goats. Among the Ababda, as among the Bisharin, milk may

¹ C. G. and B. Z. Seligman, "The Kababish," *Harvard African Studies*, vol. ii.

only be received into a wicker vessel, and it may be boiled. When a man has milked an animal he may not immediately drink the milk, but must wait till someone else has drunk of it first. They say this custom is more strictly observed by the Bisharin, but they will go to some inconvenience when travelling alone and wait hours for a chance stranger to turn up before milking their camels.

The Ababda, unlike the Arabs, will not kill or eat the sand grouse or the desert partridge (*Ammoperdix heyi*); while only Qireij-ab (and few of them) regard the spiny-tailed lizard (*Uromastix*) as edible. Some Arabs eat this reptile.

When a horned viper (*Cerastes*) is killed, its corpse is buried in the sand with seven camel-droppings beside it. Unless this is done God has to send an angel to guard the grave (to prevent its coming to life again ?) for an uncertain period.

They use the gazelle trap, common in the Sudan, consisting of a circle with bamboo or wooden spikes projecting towards the centre (like a wheel with spokes but no hub), into which the animal can put its foot, but is unable to withdraw it. Jebely, a Muzeina Arab from Sinai, expressed surprise and delight on seeing this contrivance, which he declared to be unknown to the Arabs. Its use in Egypt dates back to the very earliest dynastic times.

The Ababda do not live in camel-hair tents as do their Arab neighbours, but prefer huts made of matting resembling those of the Bisharin.¹

They use the long shepherd's crook, "maharakt," for pulling down the topmost branches of the acacias, as do the Bisharin and Amarar. Some of these sticks are well over 20 feet long.

Steatite² is found in many places, notably near the ancient emerald mines of Sikait, at Rod el Baram in Wadi Beza, and at the point where a northern diversion of the main Quft-Quseir road crosses the watershed. The articles manufactured are tobacco-pipes, bullet-moulds, and shallow dishes resembling those figured by Professor Whittimore in *Man*, vol. xii, p. 65. I have also seen toy camels, said to have been made by children. The Ababda have a primitive form of still, but brew nothing stronger than a sort of unguent for dressing the sores on their camels.

Penfield,³ a former United States Consul-General in Egypt, describes what he calls a "courage-dance," witnessed at Aswan about 1896. Eight unmarried youths danced round a "sheikh from the Red Sea" armed with a courbash or hide whip. With this he lashed any youth whose attention he caught wandering. This continued till all the boys were well thrashed, when eight fresh victims took their places. Any youth flinching was held to be disgraced, and unable to marry at the next 'Id el Kebir. Penfield mentions one case of this.

¹ C. G. Seligman, *Man*, vol. xv, p. 47.

² Steatite is also found in the Sinai Peninsula, near the Gulf of Aqaba, where the Muzeina Arabs guard the secrets of the outcrops and the methods of pipe manufacture from the other tribes.

³ Penfield, F. C., *Present-day Egypt* (New York, 1912), pp. 351-57.

Sabah, a Sinai Arab of the Aleiqat tribe, declared that he had seen a similar custom among the Juhayna near Wej-h, where the youths danced round a girl armed with a sword. She laid on with the flat or the edge as she felt inclined, and some of them got hurt. Sabah, however, was not a youth whose statements could be relied on implicitly.

Like many other tribes, the Ababda comprise, besides the original stock, offshoots and remnants of broken nations which no longer exist separately. Thus the Ababda living north of the Qena-Quseir road, in the recently-acquired territory we have spoken of, are mostly Kimeil-ab, an offshoot from a southern Beja stock, and Qireij-ab, fish-eaters (and, therefore, despised folk), whose ancestor "drifted across from Arabia on a log." Other remnants are Hamej, el Anqar-ab, and Heteimiya; these latter outcasts, as they are in Arabia. The Ababda Heteimiya follow the customs of the Ababda; those attached to the Ma'aza the customs of the Arabs.

Although an annual festival takes place at the tomb of the tribal ancestor, Abad, in the Wadi Abad not far from Edfu, yet this ceremony is quite eclipsed by the celebration of the *'Id el Kebir* at the tomb of Shadli, the reputed inventor of coffee, in the Wadi el Sheikh. This is the event of the year to both the Ababda and the Bisharin. Shadli is said to have died at this spot on his way to Morocco, after performing the pilgrimage.

The present ruling family of the Ashabab Ababda are descended from Jubran, who flourished at the end of the eighteenth century. Before his time, Bruce mentions, as chief of the tribe in 1765, Nimr, with a son Ibrahim. My authority, Taha, a great-great-grandson of Jubran, thought that Nimr was from the Meleikab and that he was executed by the government, and Jubran appointed in his place. But he was not very sure of this. Jubran had three sons; Hasan I., who succeeded him, Huseyn and Omar. Of these, Omar was killed by the 'Atawna, and his death revenged on their sheikh by Huseyn. "He decoyed the sheikh to his house by means of a girl, murdered him, and drank his blood!" To Hasan I. succeeded his son Ibrahim, and his grandson Abdalla el Derazi. Abdalla reigned 45 years, and died about 40 years ago. His son, Hasan II., I take to be the sheikh described by Lady Duff Gordon in her "Last Letters from Egypt" as living at Luxor in 1864. Hasan II. was followed by Mustafa (a grandson of Hasan I. by a son Tbeid); and Mustafa by his son Bishir. Bishir turned the dervishes out of Haimur and Ongat in 1888, and later won a notable victory over one of their raiding parties at Meisa. In 1896, the Ababda friendly, mostly Meleikab, reoccupied Berber some days before the Anglo-Egyptian army. Bishir was succeeded by his brother Aly, who survived till 1915. One of Aly's twelve sons, Hasan III., is the present sheikh (Pl. XXIII, 3).



3. YOUTH OF THE ABABDA
(QIRELS-AB).

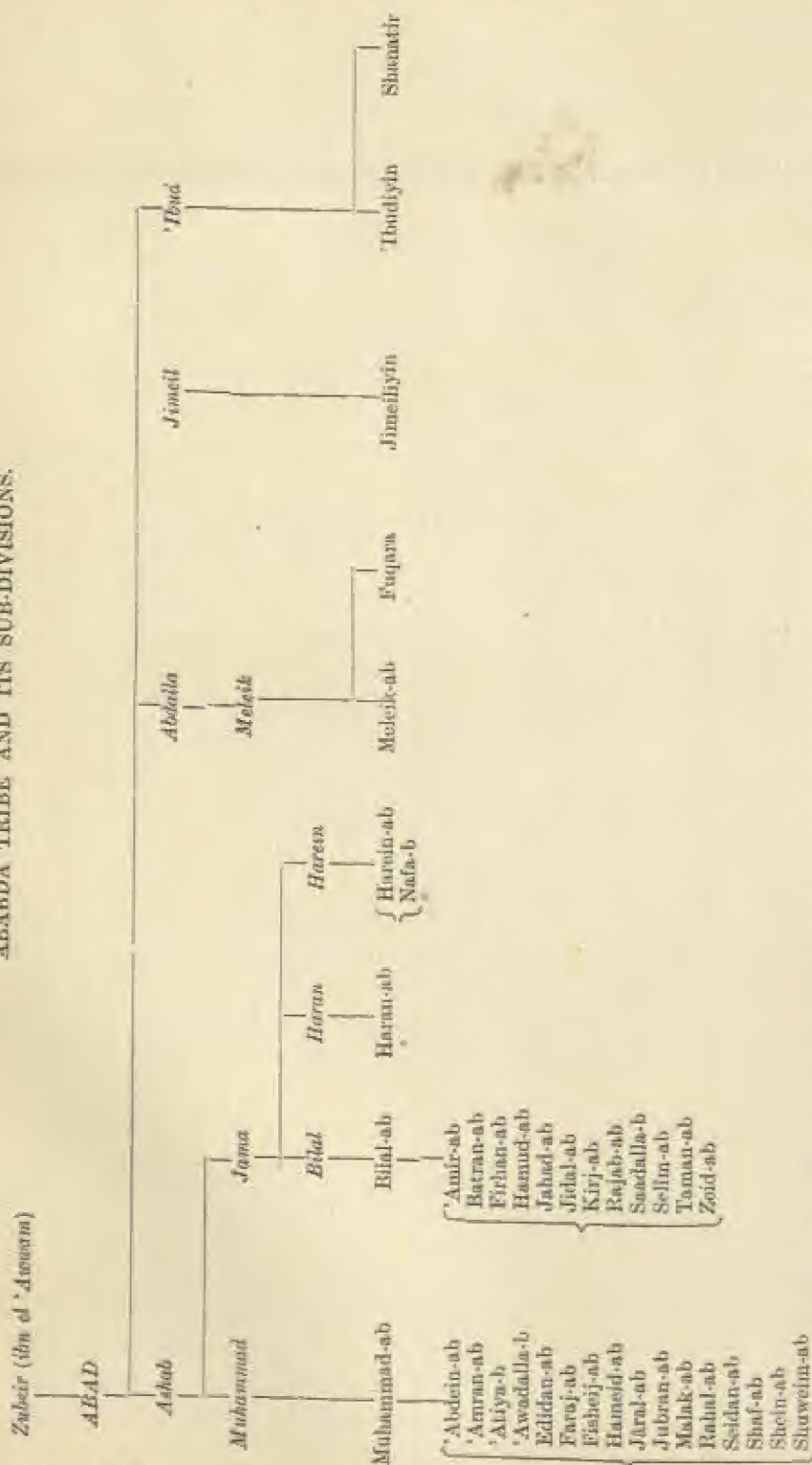


2. HASAN ALY MUSTAFA, M.B.E.,
SHEIKH OF THE ABABDA.



1. YOUTH OF THE ABABDA
(HARELS-AB).

ABARDA TRIBE AND ITS SUB-DIVISIONS.



¹² NOTE 1.—Anqar-ab, Hamej, Heteimiya, Hukm, Kimeil-ab, Qreij-ab, are remnants of broken tribes living in the Ababda territory and acknowledging their chief.

¹³ NOTE 2.—The Jama-b range along the coast from the Qaft-Qaseir road to Bir el Taw in Lat. 24°; the Muhammad-ab from Bir el Taw southwards to Bir Shalatein on the Egypto-Sudanese frontier.

NOTES ON THE SOCIAL ORGANIZATION OF AUSTRALIAN TRIBES.¹

By A. RADCLIFFE BROWN.

PART II.

THE WÓGAIBON TRIBE.

THE *Wógaibon* tribe, named from its negative, *wópai*, formerly occupied a portion of New South Wales between the Lachlan River and the Darling River. The boundaries of the tribe are shown approximately in the Map included in the first part of these notes.¹ It was adjoined by the *Bókandj*, *Kurnu*, *Weilwan*, and *Wiradjuri* tribes, and the small tribes of the Murray River and Murrumbidgee.

The tribe had the usual system of division into hordes, each owning and occupying its own territory, called its *gurumba*. The boundaries of each *gurumba* were well known to all in the neighbourhood. At the meetings of the hordes for the purpose of initiating the young men, the men of each horde, as they made their entry on to the ceremonial ground, used to shout out the names of the more important spots of their own territory. Apparently there were no distinctive names for the hordes.

Within the tribe—which was, like all Australian tribes, a language group and little or nothing more—there were names for the inhabitants of different districts. Those who lived on the Bogan River were called *Warjandi*, those around Cobar and Mulga Creek were called *Kāyárama*, and those around Ivanhoe *Bilargela*.

The *Wógaibon* had the dual division with descent in the female line, the two divisions being named *Kilpugāra* and *Mākāgāra* (or *Mākwaḡāra*). Howitt (p. 108) gives the names as *Ngiebumurra* and *Mukumurra*. The difference is probably due to local differences of dialect. There is no exception to the rule that a child belongs to the same division as the mother.

The *Mākāgāra* division is subdivided into two sections with the names *Kābi* (feminine *Kābiḡa*) and *Māri* (feminine *Maḡa*), and the *Kilpugāra* is similarly divided into *Ipai* (feminine *Ipaiḡa*) and *Kāmbu* (feminine *Buḡa*). The section to which a child belongs is determined by the section of the mother. The children of a *Kābiḡa* woman are *Māri* and *Maḡa*, those of a *Maḡa* are *Kābi* and *Kābiḡa*, and similarly with the other two sections. In a word, a child belongs to the same division (moiety) of the tribe as the mother and to the alternating section.

Each of the two moieties (*Kilpugāra* and *Mākāgāra*) is divided into a number of totemic clans, each having a special relation to one species of natural object which is its totem, or, as the natives say, its *ḡiḡga*. A child belongs to the clan

¹ See *Journ. Roy. Anthropol. Inst.*, vol. xlviii, p. 222.

of his or her mother. The only clans that are represented in the part of the tribe with which I am acquainted are as follows :—

<i>Kilpujāra.</i>	<i>Mākājāra.</i>
<i>ṭuru</i> , brown snake.	<i>kuru</i> , bandicoot.
<i>wiru</i> , padimelan.	<i>mārawi</i> , kangaroo.
<i>yuri</i> , emu.	<i>ṣigarbila</i> , echidna.
<i>ḷuli</i> , monitor lizard.	<i>meri</i> , dingo.
<i>kani</i> , frilled lizard.	<i>bilba</i> , a kind of bandicoot or rat.
<i>kuragai</i> , opossum.	<i>wirbara</i> , duck.
<i>nembā</i> , bony bream.	<i>yāpp</i> , carpet snake.
<i>yujār</i> , mallee hen.	
<i>wirindur</i> , bower bird.	

These totemic clans, besides being classified as Mākājāra and Kilpujāra, are also classified into two divisions named Ḥārawān and Muāmbuān. The Muāmbuān division includes all the animals having fur, as the bandicoot, kangaroo, dingo, opossum, padimelan. The Ḥārawān division includes all animals having scales, the snakes, the lizards, and fish. The birds are some of them Ḥārawān and some Muāmbuān, but I could not discover any principle of division. The emu is Ḥārawān. Not only the totems, but all animals are thus classified. Men and women belong to the division of their totem.

Within these divisions—which, of course, do not correspond in any way with the moieties Kilpujāra and Mākājāra—the *kuru* (bandicoot) is the head of the Muāmbuān division, and the *ṭuru* (brown snake) is the head of the Ḥārawān. This is according to the statement of a man of the bandicoot clan, and it is possible that men of other clans might give different statements.

Each totemic clan, including all the men and women of the clan and all the animals of the totem species, is subdivided into what may be called “blood” divisions. There are two of these, with the names Gwaigālir (thin or quick blood) and Gwaimānzan (thick or slow blood). The Gwaigālir division is sometimes spoken of by the name Wiggū, which refers to the top of a tree, and Gwaimānzan is sometimes denoted by the names Makulu and Narai, both of which are said to mean the butt or lower portion of a tree. The native explanation of these terms is that some persons have thin or active blood that flows freely when they are cut, while others have sluggish or thick blood that does not flow so freely, and that animals are similar in this respect to human beings, there being animals in each species with thin and others with thick blood. The bark at the butt or lower portion of a tree is thicker than that of the upper portion, and the natives regard the sap of the upper portion as flowing freely, and therefore as corresponding to the thin active blood of Gwaigālir, while the lower part corresponds to the sluggish blood of Gwaimānzan. Thus while every man and every kangaroo is either Gwaigālir

or Gwaimānzan, but cannot be both, every tree is Gwaigālir above and Gwaimānzan below. There is a rule that is to be observed when a number of persons sit down in the shade of a tree, that those of Gwaigālir shall sit in the shade of the upper portion of the tree, and those of Gwaimānzan shall sit in the shade cast by the butt. If you come across a kangaroo sitting in the shade of the upper portion of a tree, it is a proof that that particular animal is Gwaigālir, whereas if it is in the shade of the butt it will be Gwaimānzan.

The children of a Gwaigālir woman of any totem are Gwaigālir, and those of a Gwaimānzan are Gwaimānzan.

The terms of relationship of the Wópaibon tribe are given in the following list :—

Kága or *kágamba*.—Used by a younger man in speaking of or to an elder, being applied in the form *kága* to an elder brother and to a father's brother's son and a mother's sister's son if older than the speaker, and in the form *kágamba* to a father's father, father's father's brother, mother's mother's brother, etc.

Káhumai (sometimes pronounced *kálmai*).—The reciprocal of *kága* and *kágamba*, and therefore always applied by an older man to a younger, as to his younger brother, father's brother's son, mother's sister's son, son's son, brother's son's son, sister's daughter's son, etc.

Kátai.—"Elder sister." Applied by a man to women older than himself, including his own sisters, father's brother's daughters, mother's sister's daughters, etc. The reciprocal is *káhumai*.

Mími.—Applied by a man to his mother's mother and her sisters.

Pári or *páriga*.—"Younger sister." Applied only to women younger than the speaker, including his sisters, father's brother's daughters, mother's sister's daughters.

Kani.—A term used reciprocally between mother's brother and sister's son. The younger of the two calls the elder *kanimba* and is called *kuniya* by the elder.

Kuni.—The term applied by a man to his own mother and her sisters. There are two derivative forms—*kunimba*, applied to women older than the speaker, and *kuniya* or *kuniyara*, applied to those younger.

Wáru or *wáruđi*.—A woman calls her own son *wáruđi*. If a woman is *kunimba* to a man he is *wáruđi* to her, and similarly a man is *wáru* to his *kuniyara*.

Kapainla.—Applied by a man to his sister's daughter. The reciprocal is *kani* or *kanimba*.

Iulunal.—A term sometimes used by a man to denote his sister's son and daughter. It is possibly not a true Wópaibon word.

Bába.—Applied by a man to his own father, his father's brothers, his father's father's brother's sons, the husbands of his mother's sisters and others.

Bábuna.—Applied to a man younger than the speaker who stands to him in the same relation as a *bába*; for example, a father's father's brother's son.

Bárian.—The reciprocal of *bába* and *bábuna*, applied by a man to his own son, his brother's son, wife's sister's son, etc.

Bárianja.—The feminine of *bárian*, applied by a man to his own daughter, his brother's daughter, etc.

Kámi or *kámian*.—Applied by a man to his own father's sister and to the sister of any *bába* or *bábuna*. If the woman is older than the speaker the form *kamianba* is used; if she is younger he may call her *kamianja*.

Wandáian.—Applied by a man to his wife's mother and to the mother of any woman he may marry. A man's mother's mother's brother's daughter is his *wandáian*.

Bandáian.—Applied to the brother of a *wandáian*, i.e., to a wife's mother's brother, or to a mother's mother's brother's son.

Juān (sometimes pronounced *yupān*).—Applied by a man to the sons and daughters of his *wandáian*, i.e., to his wife, wife's sister, brother's wife, and in general any woman he might marry, and to the brothers of all these.

Juāngiri.—Used by a woman to her brother's wife.

Kuman.—Applied to a father's sister's son and mother's brother's son. In speaking of a younger man the form *kumanya* is used.

Mama, *mamajara*.—Father's sister's daughter and mother's brother's daughter, or the daughter of any *kani* or of any *kámi*. *Mama* is used of an older or senior relative, and *mamajara* for one younger or junior.

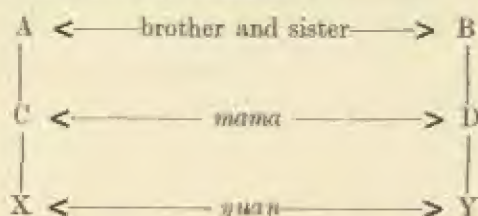
Káriga, *yanuyai*, *sáda*, *sádayara*.—In the use of these terms there seems to be some confusion due to the mixture of languages in recent times. It is impossible to speak with assurance on such a matter, but I believe the truth to be that the terms *sáda* and *sádayara* were formerly used on the Bogan River in that part of the tribe which adjoins the Weilwan, while *káriga* and *yanuyai* were used with exactly similar meanings in that part of the tribe known as Kagarama, to which my two chief informants belonged. A man calls his mother's father, or his father's mother's brother *sáda* or *káriga*, and the husband of any *mimi* ("mother's mother") is also *sáda* or *káriga*. The reciprocal of *sáda* is *sádayara*, and that of *káriga* is *yanuyai*, and these terms are consequently applied by a man to his daughter's children, etc.

The above list contains all the terms commonly used by men to denote their various relatives. As I found no woman who could serve as an informant, I did not record the terms used by women.

The relationship system of the Wónaibon is an example of what I have called in those notes Type II. In essential features it is similar to the systems of the Aranda and Dieri tribes which we may take as typical of Type II.

In normal systems of Type II the rule of marriage is that a man may only marry a woman who stands to him in a relation equivalent to that of mother's mother's brother's daughter's daughter. This is the rule of the Wónaibon tribe,

as may be seen from the list of terms. A man's mother's mother's brother's daughter is his *wandáian*, and it is the daughter of his *wandáian* that is his proper wife. The natives state the rule in a somewhat different way by saying that if two women are *mama* to one another then the son of one may marry the daughter of the other. The following diagram illustrates this statement :—



A and B are sister and brother to one another, and their daughters C and D are therefore *mama* to one another. The children of C and D are therefore *guan* and may intermarry. If X is male then D is his *wandáian*. It is obvious from the diagram that a man marries his second cousin, either his mother's mother's brother's daughter's daughter, or his mother's father's sister's daughter's daughter. This is the ordinary marriage rule of all normal systems of Type II.

Compared with other normal systems of Type II, there are a few interesting features. The first is the absence of the usual term for father's father and son's son, these relatives being classified in the Wópaibon with elder and younger brothers. Owing to the confusion that there was between the terms *gáfa*, *sadagara*, *káriga*, *yanugai*, I was unable to work out the system in full, and I am unable to state definitely whether or not the system possesses the feature that exists in so many examples of Type II by which the same term is applied to a mother's mother's brother and to a mother's mother's brother's son's son.

It now remains to show what is the relation of the system of relationship to the sections and clans. It is too late now to study the local organization of these tribes, as it was destroyed many years ago by the coming of the white man, and it is therefore impossible to find out for certain whether the horde was or was not a clan, i.e., whether it consisted in all instances of persons related to one another in one direct line, or whether it might include persons of more than one line of descent. What hints I could gather pointed to its having been a clan, i.e., containing only men who were *kágamba*, *bába*, *kága*, *kálumai*, or *bárian* to one another. It is, of course, obvious that with descent of the totem in the female line each horde contained members of several different totemic clans.

It will simplify the exposition of a complicated matter to take a particular individual and consider his relations to other members of the tribe, and it is most suitable to select for this purpose my chief informant. He belonged to the bandicoot clan, and therefore to the Mākājāra moiety, and was of the Kābi section and the Gwaigāliṛ blood. His mother was therefore Mākājāra, Maṣa, bandicoot, Gwaigāliṛ. His father was Kilpujāra, Kāmbu, emu, Gwaigāliṛ.

Our selected individual being Kābi, bandicoot, he called any Kābi (male) bandicoot older than himself *kāgamba* ("elder brother"), and any Kābi bandicoot younger than himself he calls *kālumai* ("younger brother"). Any Kābiḡa (female) bandicoot older than himself he calls either *mimi* ("mother's mother") or *katsi* ("elder sister"), and any Kābiḡa bandicoot younger than himself is his *pūri* or *pūriḡa* ("younger sister"). The question whether a particular woman is his *mimi* or his *katsi* can only be settled by examination of the actual individual, i.e., genealogical, relation between them. His own mother's mother and her sisters are his *mimi*. The daughters of his own mother's sisters are his *katsi*.

My informant told me that he would apply these terms *kāga*, *kālumai*, *mimi*, *katsi*, and *pūri* to all Kābi and Kābiḡa, no matter to what totem clan they might belong; but, as the point is one of the greatest importance, this bare statement is not to be accepted without some supporting evidence, and unfortunately I was not able in the time at my disposal and with the informants available to obtain such evidence, so that this very important matter must be left undecided.

My informant's mother's section is Māri-Maḡa. Any Māri bandicoot older than himself is his *kāni* or *kānimba* ("mother's brother"), and any Māri bandicoot younger than himself is his *kaniḡa* ("sister's son"). Any Maḡa bandicoot older than himself is his *kuni* ("mother"), and any Maḡa bandicoot younger than himself is his *kuniḡa* or *kuniḡara* ("mother's younger sister") or his *kapainla* ("sister's daughter").

My informant's father was Kāmbu, emu, Gwaigālir. My informant called him *bāba* ("father") and applied the same term to all Kāmbu, emu, Gwaigālir older than himself, while those younger than himself he called *bābuna*. These men all called him *bārian* ("son"). He calls all Buḡa, emu, Gwaigālir older than himself *kāmian* or *kāmianba* ("father's sister"), while those younger than himself are his *kamiḡa*. In general he applied the same terms (*bāba* and *kāmian*) to many Kāmbu and Buḡa, emu, Gwaimānzan; but in this blood division of the emu clan there were some women who were not his *kāmian* but his *wandāian* ("wife's mother"), and whose brothers would therefore be not *bāba* but *bandāian* to him. Those emu men and women who lived in his own part of the country were all closely related to him, whether they were of the Gwaigālir or the Gwaimānzan blood, and it would only be an emu woman from a distant part who could be his *wandāian*, and she must be Gwaimānzan and not Gwaigālir. Every Buḡa emu Gwaigālir, no matter from how distant a country she might come, would be his *kāmian*.

Turning now to Ipai and Ipāḡa emu, my informant calls all Ipai emu of the Gwaigālir blood *kuman* or *kumanya*, or else *kāriḡa* or *yanuḡai* (or the apparent equivalents *ḡata* and *ḡadayara*). So far as I could determine, *kāriḡa* (or *ḡata*) is the proper term for his father's mother's brother, and *kuman* for his father's sister's son. There is, however, a vagueness in the application of these terms, my informants applying all three terms *kāriḡa*, *kuman*, and *ḡata* to the same relative.

This vagueness may, of course, be due simply to a failure on my part fully to understand the system, but I think it was more than this. There remain two possibilities, either that my informants were themselves a little muddled, possibly by the fact that they were using terms from different tribes or different languages, or else that this vagueness in the application of these terms was a feature of the system in its original form.

My informant calls all Ipaşa emu Gwaigälir *mama* or *mamayara* according as they are older or younger than himself. Thus his own father's mother and his father's sister's daughters older than himself are his *mama*.

In the other blood division (Gwaimānzān) of the emu clan most of the Ipaí men are *káriga*, *kuman*, or *yanuyai* to my informant; but there might be some men in this blood division whom he would call *yuan* or *yuandu*, being the sons of his *wandáian*. The sisters of these men would also be his *yuan*, and he might marry them.

Thus with regard to his father's clan (emu) my informant might not marry any Buşa, either Gwaigälir or Gwaimānzān; but, if the individual relationship allowed it, he might marry an Ipaşa emu Gwaimānzān without breach of the tribal law. He might not marry an Ipaşa emu Gwaigälir, i.e., a woman of the same blood division of the clan as his father, although she is of the section into which he may marry.

My informant's relation to the padimelan clan seems to have been exactly similar to his relation to the emu clan, though I did not trace out the individual relationships by which this had come about. He calls—

Kāmbu padimelan	Gwaigälir	<i>bába</i> or <i>bábuna</i> .
"	"	Gwaimānzān <i>bába</i> or <i>bábuna</i> or <i>bárian</i> or <i>bándáian</i> .
Buşa	"	Gwaigälir, <i>kámian</i> .
"	"	Gwaimānzān, <i>kámian</i> or <i>wandáian</i> .
Ipaí	"	Gwaigälir, <i>káriga</i> , <i>kuman</i> or <i>yanuyai</i> .
"	"	Gwaimānzān, <i>káriga</i> , <i>kuman</i> , <i>yanuyai</i> or <i>yuan</i> .
Ipaşa	"	Gwaigälir, <i>mama</i> .
		Gwaimānzān, <i>mama</i> or <i>yuan</i> .

Thus, if he sought a wife from the padimelan clan it could only be one of the Ipaşa section and Gwaimānzān blood.

With regard to the *namba* (bony bream) clan, I believe that the position of my informant was the same as that in which he stood to the emu and padimelan clans, but I could not determine this with certainty. What is quite certain is that he could only marry an Ipaşa of this clan and not a Buşa. The doubt is whether he might only marry Ipaşa *namba* Gwaimānzān, or whether he might also marry Ipaşa *namba* Gwaigälir.

With regard to the opossum, mallee hen, brown snake, and monitor lizard clans the position of my informant was quite different. In all these clans he could only marry Buşa and might not marry Ipaşa. In them the Kāmbu men are his *kāriga*, *kuman*, *yanuyai*, or *yuan*, and the Buşa women are his *mama* or *yuan*, while the Ipai men are his *bāba*, *bārian*, or *bandāian*, and the Ipaşa women are his *kāmian* and *wandāian*. The position of the sections in these clans is therefore exactly the reverse of that of the sections in the emu, padimelan and bream clans.

It must not be supposed, however, that he may marry any Buşa of these clans. He may only marry his *yuan*, the daughter of his *wandāian*, and may not marry his *mama* or *mamagara*, the daughter of his *kāmian*. It is through genealogical relationships that it is determined which women are his *kāmian* and which his *wandāian*. Exactly what part is played by the blood divisions in tracing out these relationships I was unable to determine in detail.

My informant, then, a Kābi bandicoot, might marry an Ipaşa of the emu, bream or padimelan clans, or a Buşa of the brown snake, monitor lizard, opossum, mallee hen, and frilled lizard clans. I was not able to determine the proper marriages for other clans. Howitt (p. 214) gives an account of the marriage rules of the Wópaibon tribe, communicated to him by A. L. P. Cameron. From the information there given, I have compiled the table below, which shows the rules for intermarriage between pairs of clans:—

Ipai intermarries with Kābi.		Ipai intermarries with Māri.	
Kāmbu	Māri.	Kāmbu	Kābi.
opossum	kangaroo	opossum	{ bandicoot black duck wild duck
emu	{ black duck wild duck bandicoot	emu	kangaroo
mallee hen	{ black duck wild duck	mallee hen	{ kangaroo bandicoot

It will be seen that the proper marriages of bandicoot with emu, mallee hen and opossum, as stated by my informant, are the same as those given in the table.

It is unfortunately now too late to obtain satisfactory information about the totemic ritual of this tribe. At the *Burbāy*, or initiation ceremonies, dances were formerly performed, each having some connection with some species of animal. I was told that when the animal was a totem the dance might only be performed by the men of the totemic clan.

There was no prohibition in this tribe against killing or eating the totemic animal. A man might eat his own totem just as freely as any other animal.

The Wógaibon had what have been called sex-totems. They believed in a special connection of some kind between the men of the tribe and the bat (*paṭaibal* or *paṭaibala*) and similarly between the women and the night owl (*zīal*). The men would be very angry if the women killed a bat, and the women would be similarly offended if a man killed an owl.

Besides the clan totems and the sex-totems there are in this tribe, as in others of the same region, what I shall call personal totems. But while every individual belongs to a clan and therefore has a clan totem, only a certain number of men and women have personal totems. The personal totem is called *yeruṣa* and is some species of animal. A man or woman will in no circumstances kill or eat his or her *yeruṣa*. The possession of a personal totem enables the possessor to perform magic, and every medicine man (*wirigan*) therefore has one or more personal totems. I was not able to obtain information as to the way in which the personal totem is acquired, as this is a secret matter known only to the medicine men. The more personal totems a *wirigan* has the more powerful is he in magic both good and evil.

NOTE ON THE DJAMBAR TRIBE OR SUB-TRIBE.

If the map published with the first part of these notes is compared with the map of the tribes of New South Wales published by Dr. John Fraser in his *Aborigines of New South Wales*, 1892, it will be noticed that the Wógaibon tribe is not shown on the latter, their territory being shown by Fraser as divided between the tribes he names Wira-dhari, Ba-kan-ji and Gai-amba. The two first-named tribes are those I call Wiraduri and Bākāndi. The third name, Djiambar, is the subject of this note.

Fraser's map marks as belonging to the "Gaiamba" tribe a small part of the Wógaibon territory and the whole of the country of the Weilwan tribe. On p. 36 of the work quoted Fraser mentions the "Ngaibaba" tribe, speaking of "the Ngaibaba blacks . . . who speak the Wailwan dialect." It is therefore clear Fraser uses the name Gaiamba or Ngaibaba to denote the tribe that I call Weilwan, this being, I believe, the true tribal name formed from the negative *weil* or *wail*.

My own enquiries seemed to show that the name Djiambar (as my informants pronounced it) is the name of a part of the Weilwan tribe living on the Bogan River and adjoining the Wógaibon. I was told that the negative in Djiambar is *weil*. This information was given not only by one of my Wógaibon informants, but also by a Murawari and by a young man who called himself Djiambar.

Mr. R. H. Mathews, in his *Ethnological Notes on the Aboriginal Tribes of New South Wales and Victoria*, writes of a tribe which he calls Ngeumba, and states that it formerly occupied the country from Brewarrina on the Darling River southerly up the Bogan almost to Nyngan. He distinguishes it from the Wailwan tribe and also from the "Wongaibon" tribe. On turning to the vocabulary given by Mr. Mathews, we find that the word for "no" in this supposed tribe is "wongai" (*wogai*) which would make the Djiambar a division of the Wōgaibon tribe.

From the statements of my informants I feel sure that Fraser was right, and that the Djiambar are really a local division of the Wailwan. At any rate, the evidence is all against the existence of a separate Djiambar tribe.

Mr. Mathews gives an account of the social organization of the Djiambar about which it is necessary to make a few remarks. He states that the community is divided into two "primary phratries" called "Ngurrawun" and "Mumbun," with their feminine equivalents "Ngurrawunga" and "Mumbunga." "The Ngurrawun phratry is again divided into two sections called Ipai and Kumbo, and the Mumbun phratry into two, called Kubbi and Murri." These names are those I have spelt *Djārawān* and *Muāmbuān*; but Mr. Mathews gives them as the names of the two moieties, which, in the Wōgaibon tribe, are named *Kilpujāra* and *Mākājāra*. It is possible, perhaps, that the Wailwan have the same names for moieties that the Wōgaibon have for divisions of a quite different character, but I think it is quite improbable. And as the information given by Mr. Mathews cannot with any certainty be ascribed either to the Wailwan or to the Wōgaibon, it is impossible to make any use of it. It is possible that Mr. Mathews met with the names *Djārawān* and *Muāmbuān*, and drew the conclusion that they were the names of phratries as he calls them, *i.e.*, of moieties.

This is, perhaps, a suitable place to point out that it was to Mr. Mathews that we owed our first knowledge of the blood divisions, which he described in the account of the Ngeumba tribe referred to above. It is to be regretted that he did not make a more thorough study of the subject by means of genealogies, and so provide us with the means of judging the part that these divisions play in the system of organization of the tribes in which they occur.

THE MURAWARI TRIBE.

The Murawari tribe formerly occupied a stretch of country to the north-west of the Culgoa River.

The tribe had the same form of local organization as the Wōgaibon tribe, being divided into hordes with descent in the male line, each horde owning and occupying a "run" or territory known as the *maji* of the horde.

There were names for the inhabitants of different districts. Those living in the back country away from the Culgoa River were called Kan̄kargari, while those on the Culgoa itself were the Ƨandugari. These local divisions of the tribe (sub-tribes) probably spoke different dialects of the Murawari language.

The tribe was divided into four sections with the names Ipai (feminine Ipaṣa), Kābi (feminine Kābiṣa), Māri or Mariyi (feminine Maṣa), and Kāmbu (feminine Buṣa). The section of a child is determined by that of its mother in accordance with the following table:—

The children of Ipaṣa are Kāmbu and Buṣa.

„ Kābiṣa „ Māri and Maṣa.

„ Maṣa „ Kābi and Kābiṣa.

„ Buṣa „ Ipai and Ipaṣa.

Although the names of the sections are the same as those of the Wōṣaibon, yet the sections of the same name are not regarded as equivalent when it is a question of marriage or relationship between members of the two tribes. For instance, a Kāmbu man of the Wōṣaibon tribe is regarded as Kābi in the Murawari tribe, and inversely a Wōṣaibon Kābi is regarded as being Kāmbu in Murawari. The equivalent classes are thus:—

<i>Wōṣaibon.</i>	<i>Murawari.</i>
Ipai	equivalent to Māri.
Kābi	„ Kāmbu.
Māri	„ Ipai.
Kāmbu	„ Kābi.

Mr. R. H. Mathews states that the Murawari had names for a dual division of the tribe, the "Girana" division comprising the two sections Kābi and Māri, and the "Merugali" division comprising Kāmbu and Ipai. In the course of my enquiries I did not come across these names, and at the time I did not remember that Mr. Mathews had recorded them, and so made no effort to verify his statement.

Each of the two moieties of the tribe—Māri-Kābi and Ipai-Kāmbu (or Girana and Merugali, if Mr. Mathews' information is correct)—is divided into a number of totemic clans with descent in the female line. The totem of my chief informant (an Ipai) was *kula* (kangaroo), and that of another of my informants (a Māri) was *koṣai* (opossum). Other Murawari clans were *dagoain* (padimelan) and *kārā* (eaglehawk). A man's totem is called his *wiṭi*, i.e., his "meat."

Within each totemic clan there is a division according to blood. Some of the members of each clan are Gilya-goain, while the others are Bindi-goain. The former term means light or thin blood, and corresponds to the Gwaigälir of the Wôyaibon and other tribes; the second means thick or dark blood, and corresponds to Gwaimānzan. A child belongs to the same blood division as his mother. Mr. R. H. Mathews has described the blood divisions of the Murawari tribe, but he gives the names as "Magulu" (sluggish blood) and "Bumbira," (swift blood). These names belong properly, I believe, to the Baderi tribe.

There is the same association between the Gilya-goain and the shade of the top of the tree, and between Bindi-goain and the shade of the butt that has already been noticed in connection with the blood divisions of the Wôyaibon.

The totemic animals, and, perhaps, all animals, are classified into two divisions named Giga and Māndain, corresponding to the D̄arawān and Muāmbuān of the Wôyaibon. All animals having hair or wool are Māndain, such as the kangaroo, opossum, etc., while snakes, lizards, and fishes are Giga. Some of the birds are Māndain, as the crow and the galah, while others—for example, the eaglehawk and the black cockatoo—are Giga. The bat is Māndain; the common fly is Giga.

The system of relationship of the Murawari is somewhat similar to that of the Wôyaibon. We may begin by considering the relatives of a man's own section, taking for the purpose a man of the Ipai section. The men of his own section who are older than himself are all *bowen* or *bowen-bowen* to him, and he is *muān* to them. The term *bowen* is applied in the first instance to an elder brother and to such relatives as a father's brother's son or a mother's sister's son if older than the speaker. The doubled form is applied in the first instance to a father's father and to his brothers, and is used in addressing a man considerably older than the speaker. The term *muān* is applied to a younger brother, to a father's brother's son, and to a son's son or brother's son's son.

An Ipai calls all Ipasa either *bāba* or *kwiara*, according as they are older or younger than himself. For a grandparent the form *babada* (reciprocal *muāndiga*) is used instead of the simple *bāba* (reciprocal *muān*). This is the general rule, but I believe that a special term *murama* is also applied to a mother's mother and her sisters. The term *bāba* is applied to an older sister and to the relatives usually classified with older sister in Australian systems. The term *kwiara* is applied to younger sisters.

Our Ipai calls all Kāmba his *kaṛi*, thus applying this term to his mother's brothers, his wife's father, his sister's sons and his daughter's husband. If the man is markedly older than the speaker the doubled form *kaṛi-kaṛi* is used, and a man considerably younger than the speaker is called *kaṛigara*. Ipai calls Buṣa, who are the sisters of his *kaṛi*, either *kaia* or *kuṣama*. The term *kaia* is applied in the first instance to mother and mother's sister, and the term *kuṣama* to sister's daughter.

The above description gives all the terms that are commonly used by a man in addressing or referring to the relatives of his own moiety of the tribe. It may be useful to repeat the terms in the form of a list :—

<i>bowen-bowen</i> , father's father.	<i>kaꞑi</i> or <i>kaꞑi-kaꞑi</i> , mother's brother.
<i>bowen</i> , elder brother.	<i>kaꞑi</i> or <i>kaꞑiyara</i> , sister's son.
<i>muān</i> , younger brother.	<i>kuia</i> , mother.
<i>bāba</i> , elder sister.	<i>kuzama</i> , sister's daughter.
<i>kwiara</i> , younger sister.	

Turning now to the relatives in the father's moiety, the system is more complicated and more difficult to describe. It will be convenient to take each of the native terms in turn and explain its application.

Yamain-yamain.—This term is applied to a mother's father and his brothers, the reciprocal being *yamain-nera*, which is applied by a man to his daughter's son and brother's daughter's son.

Paꞑay.—Applied by a man to his own father and his father's brothers.

Kuzara.—Reciprocal of *paꞑay*, applied by a man to his sons and his brother's sons.

Mugi or *mugi-mugi*.—Applied by a man to his father's sister. The doubled form is used of a woman considerably older than the speaker.

Kundi-kundi.—A man applies this term to some of the women who are *bāba* or *kwiara* to his father, but not to his own father's sister. His *kundi-kundi* are his mothers-in-law, the women whose daughters he might marry.

Karuwalain.—Reciprocal of *kundi-kundi*, and therefore applied by a woman to her daughter's husband or to any man whom her daughter might marry. A man applies the term *karuwalain* to the brother of his *kundi-kundi*, i.e., to his wife's mother's brother.

Kiriꞑ.—A man applies this term to the sons of his *kundi-kundi*, and therefore to his wife's brother and to his sister's husband.

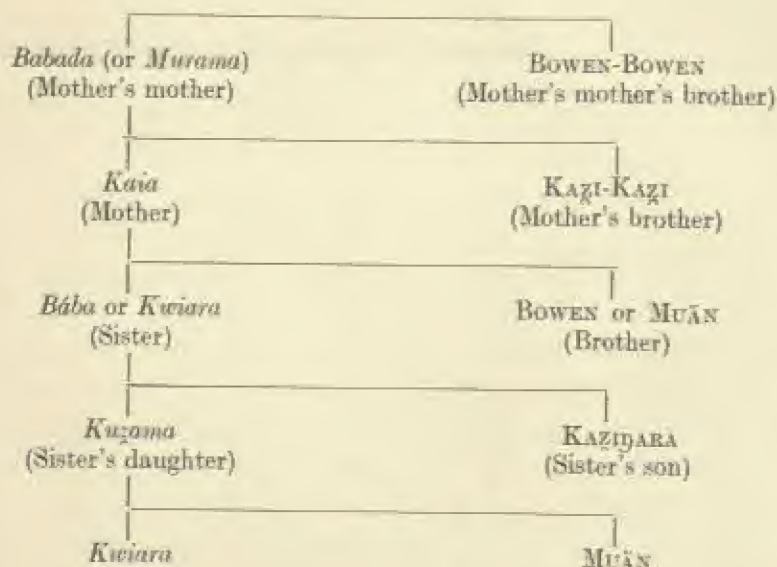
Nuba.—This is the term by which a man denotes the daughter of his *kundi-kundi*, i.e., a woman whom he might marry.

Yamain.—A man applies this term to the sons of his "father's sister" (his *mugi*). To a man considerably younger than himself he will use the form *yamain-nera*.

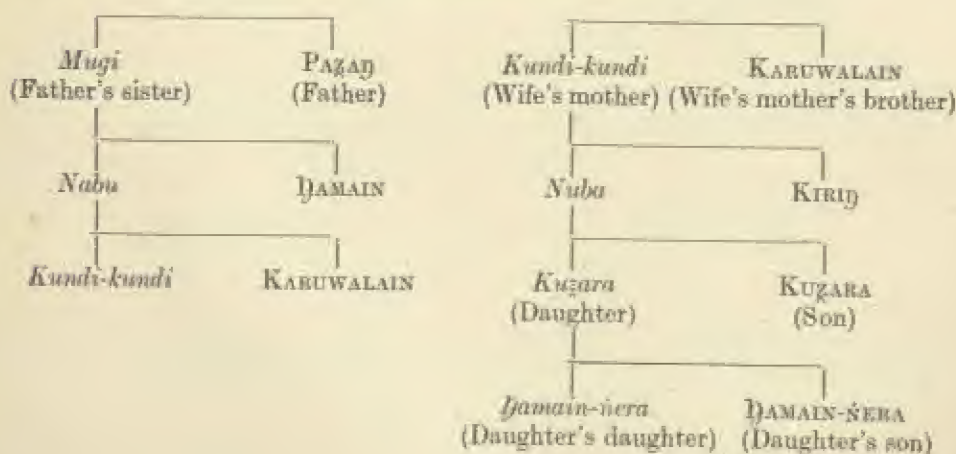
Nabu or *nabu-nabu*.—This term is applied to the daughters of a *mugi* ("father's sister"). A man may not marry his *nabu*.

From the above account it appears that the Murawari system is of Type II, but is not as fully developed as the more typical systems such as the Aranda. In particular a remarkable feature is the apparent absence of any term for wife's father as distinguished from mother's brother. It is very difficult to be quite certain that there is no such term, but I did not find one in spite of enquiries.

In a man's own moiety it would seem that he only recognizes one line of descent, the father's father not being distinguished from the mother's mother's brother. This line of descent is shown in the following table :—



In the moiety to which his father belongs a man recognizes two lines of descent, to one of which his father belongs, while it is from the other alone that he may take a wife. This is illustrated in the following table :—



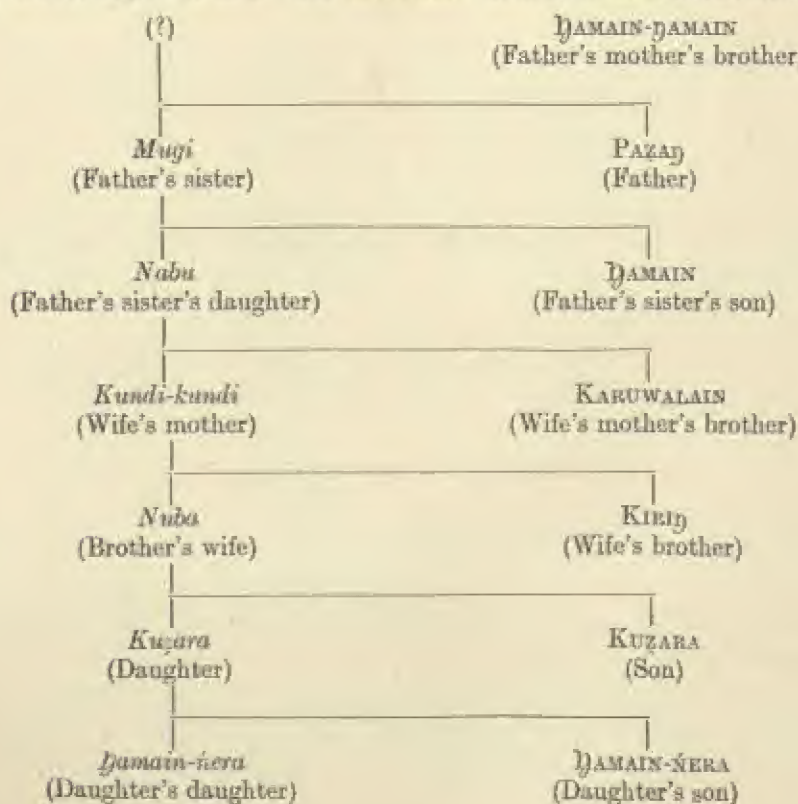
I believe that the above table faithfully represents the Murawari system, but it was impossible for me, with the few informants at my disposal, to make absolutely certain of all the details. In particular, I am not sure what term would be used

for the father's mother, and if the same term would also be applied to the wife's mother's mother. It seemed that one term, *yamain-yamain*, was used for both these relatives, but I was not able to satisfy myself on the point.

The important distinction is between the father's sisters, whose daughters are not marriageable, and those women who are a man's *kundi-kundi* and whose daughters he may marry. The question as to whether a particular woman is *mugi* or *kundi-kundi* to a particular man is settled by considering the actual individual relationship. In such matters the totem clan of the two individuals has also to be taken into account, and also the blood division of each.

As may be seen from the table, the children of a man's *mugi* are his *nabu* and *yamain* (father's sister's son and daughter), while the children of his *kundi-kundi* are his *nuba* and *kiriŋ*. A man marries one of the women he calls *nuba*.

The children of a *nuba* are *kuzara*, this being the term a man applies to his own and his brother's children. The children of his *nabu* are, I believe, his *kundi-kundi* and *karuwalain*. This is a most important feature, and would seem to imply that a man may marry his own father's sister's daughter's daughter's daughter. When we consider this feature of the system we see that although at first sight it looks as if there were two lines of descent in the father's moiety, yet there is really only one line of descent divided into twice the number of generations that we should expect to find. The table must then be rearranged as follows:—



It is possible that the mother's mother's brother's wife is called *nabu* or *nabu-nabu*, but of this I could not be sure.¹

The regulation of marriage in the Murawari tribe is by relationship, and by that alone, as it is in all other Australian tribes about which we have full information. A man may marry any woman who is his *nuba*, and may not marry any other. Thus an Ipaï cannot marry any Ipaşa or Buşa, for these two sections do not include any women who are *nuba* to him. He is not, however, confined to one of the other two sections, but may marry into either of them. Some of the women who are *nuba* to him are Maşa, but others are Kābişa. It is quite likely there is here a system similar to that of the Wôpaibon tribe, by which a man marries differently into different totem clans, but unfortunately I could not determine this. Further, I was not able to discover exactly the part played by the blood divisions in the system of relationship and the regulation of marriage.

It is now too late to obtain any extensive information about the former totemic beliefs and practices of this tribe. A man or woman may freely eat of the totemic animal, and indeed a man calls his totem his *wi'li*, this word being apparently the common word in this language for "meat" or flesh food.

The only totemic ritual about which I could obtain any information at all was that constituted by certain ceremonies, each connected with one of the totemic species, which were formerly performed at the meetings for the initiation of young men. At such meetings there were performed sacred dances or corroborees (not to be seen by women or the uninitiated) connected with animals such as the kangaroo, the opossum, the eaglehawk, etc. I was told that when the animal with which the dance was connected was a totem of one of the clans only the men of that particular clan would take part in it. If any man who did not belong to the opossum clan, for instance, should try to dance the opossum dance the men of that totem would be very angry with him, and there would probably be a fight. Such sacred animal dances were called, I believe, *toiyba*. It is now impossible to obtain information about their peculiar features or about their meaning.

¹ This peculiar feature of many systems of Type II is of the greatest importance for a proper understanding of the type, and unfortunately has been inadequately studied. It makes the system very difficult to determine exactly without the aid of very extensive genealogies, which are not easily obtained from tribes that have been for some time under white influence. I feel fairly certain in my own mind that the same feature exists in the Wôpaibon system, and that I should have been able to demonstrate it if I could have made out the exact uses of the terms *gad a*, *kariqa*, and *kuman* in that tribe. But as I was not able to demonstrate it to my own satisfaction, I omitted any reference to it from my account. In a work on the Australian tribes that I am now preparing I shall deal fully with this and other peculiarities of Type II. Meanwhile it is to be hoped that any ethnologist working in the field in Australia will pay particular attention to this point, which seems to be sometimes overlooked. For comparison with another system showing the same feature, on the other side of the continent, the reader may refer to that of the *Mardu-anem* tribe described in this *Journal*, vol. xliii, p. 181.

In connection with the initiation ceremonies, and probably connected with these dances, there were songs of a sacred character (not to be heard by women) relating to different species of animals. A man might know and sing the song of an animal that was not his totem, but he was expected to know the song of his own totem.

A sacred song of the kangaroo (formerly sung at the meetings for initiation) was as follows:—

Kaninba kula buzun-buzun,
Baiamai gudi.

This brief refrain was repeated over and over again an indefinite number of times. The meaning of the song can only be discovered by reference to the myth with which it is connected. The legend to which this particular song refers is one that relates how, at a spot on the Narran River, *Baiamai* divided the black fellows into groups, giving each group a totem and sending them off in different directions. I was unfortunately unable to hear the detailed story.

Besides the sacred songs mentioned above, there were songs of a non-sacred character (or which might, at any rate, be heard by women), also connected with animals of different species. Of these songs a man would always know the song of his own totem animal, but he might know and sing the songs of other animals as well. A "clever" man (*i.e.* a man powerful in magic) could sing the song of a particular animal in such a way that he could draw all the animals of that species away from the neighbouring countries into his own country. Such a clever man might sing the kangaroo, and the kangaroos would come from all directions into his hunting ground.

As an example of this kind of song, I give below the opossum song sung to me by a man of the opossum totem. In order that the song may be understood it is necessary to give first of all the legend to which it refers.

There is a spot in the country of the Baderi tribe, known by the name of *Bul'pain*, which is famous in legend as being the place where, in the early days of the world, many of the ancestors were turned into animals, giving rise to those species which still exist. At *Bul'pain* certain stones are pointed out which were once men and women, for while some of the ancestors became animals others were turned into stone.

The first source of all the trouble was *Kiwi* (native cat). *Kiwi* lived in the camp of his uncle (mother's brother) *Bindelain* (bat). One day *Bindelain* was out searching for wild honey with his nephew, when *Kiwi* made an excuse and returned to the camp where the two wives of *Bindelain* were awaiting the return of their husband, and there he lay with the two women. Now *Bindelain* was a man skilled in magic, and he knew that his nephew was doing wrong. So he returned towards his camp to take vengeance on *Kiwi* and on his unfaithful wives. Near the camp

he found a bee's nest, and he cut three holes in the tree in which it was contained, and then he called to his wives and to *Kiwi* to come and take the honey. When they came he pointed out to them the holes he had cut, and all three of them drew near and put each an arm into one of the holes. Then by the power of his magic *Bindelain* caused the holes to become smaller, imprisoning by their arms the three guilty ones. His two wives he killed, but *Kiwi* succeeded in freeing himself and fled.

When he had killed his two wives, *Bindelain* cut off small pieces of their skin and tied them in his beard. Now the sisters of the dead women came to visit their sisters, and they came to the camp and could not find their sisters; but they saw the pieces of skin hanging in the beard of their brother-in-law and recognized them. In haste they returned to their mother, telling her of what they had seen and of how her daughters were certainly dead, slain by their husband, who now carried in his beard the dreadful trophies of his vengeance. When the brothers of the two dead women heard of what had befallen their sisters they vowed vengeance and declared that *Bindelain* must be killed.

Now about this time there was a great meeting at *Bulpaia* at which all the ancestors came together, and there was singing and dancing for many days and nights. *Bindelain* was there, of course, and his brothers-in-law sought for an opportunity to slay him and so avenge the murder of their sisters. But *Bindelain*, being powerful in the exercise of magic, knew their thoughts, and was wary, keeping his spears and shield ever with him, even when he sat to witness a dance.

Then those who sought the death of *Bindelain* took counsel together, and they agreed that if they could make *Bindelain* laugh he might forget his watchfulness and they, being ready for the moment when it came, might kill him. One after another the ancestors danced before *Bindelain*, grotesquely painted, striving with every absurdity of posture and movement to make him lose himself in laughter; but not one might succeed. Then came *Dirān* (black cockatoo with red tail), who bedaubed his rump with red paint, and postured and danced before *Bindelain*, and when he turned his rump to him, all daubed with red as it was, and moved it up and down and from side to side, then *Bindelain* no longer could keep from laughing. He laughed long, and in his laughter he forgot his danger and his weapons, and he rolled from side to side. The men who had waited for their opportunity were waiting still, and when they saw him thus at their mercy they seized him and threw him on the fire.

It would seem that *Bindelain*, burnt in the fire, became a bat, and that there followed a great fight in which many of the ancestors were turned to stone while others became animals of different kinds, the ancestors of the animals of those species at the present day. In the course of the fight many of the ancestors were burnt with the fire, and the animals of to-day still show the marks of those burns.

There was probably much more of the legend originally, but the above will suffice to explain in some degree the song of the opossum. The opossum and his wife are supposed to be walking away from *Bul'paiñ* after the events related above, returning to their own country. They have been burnt in the fire and are sore. The song consists of a number of short phrases, which are repeated an indefinite number of times. It begins thus:—

Dina kanti galina Bul'paiñ yala.

Foot burnt we two Bulpain at.

Dina mabor galina.

Foot better we two.

Wa la-ila dina mabor.

Walking foot better.

Wa la-ila daron-daron.

Walking the hollow tree.

The song continues with the constant repetition of these phrases, often returning to the beginning, and with new phrases introduced at each fresh repetition. Some of these phrases are:—

Megkili ni, catching lice.

Gumiranta, we must stop and rest.

Gambanlara wa la-ila, tired (or sore) in the leg walking.

Kunta mura wa la-ila, walking along at night.

Babarayu, the flower of the Gidyea (the food of the opossum).

Each of these phrases constitutes, as it were, a verse or line of the song, which, in this way, by the constant repetition of old phrases and the steady introduction of new, can be continued as long as the singer likes.

In addition to the clan totemism, this tribe, like others of the same region of Australia, has a system of personal totems. The personal totem is called in Murawari *yerbain*. Only men and women who are skilled in magic have personal totems, and their magical skill depends on the possession of the totem. One of my informants had as his *yerbain* the porcupine (*kagara*), lizard (*banna*), and carpet snake (*kamul*). A medicine man is believed to keep within his body an animal of the species that is his personal totem, and to be able to produce it at will and send it to work magic (either good or evil) upon others. The fat paunch of one sorcerer was mentioned to me as evidence of the possession by him of powerful totems which he kept therein. Women may possess personal totems and work magic by their means. I met with one woman who had several totems, one of them being the water-rat.

A man or woman may on no account kill or eat his or her personal totem. If any person kills an animal of a species that is the *yerbain* of a medicine man

who is in the camp he will be careful to cook it a long way from the camp for fear of offending the sorcerer and his totem.

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NOTE ON THE SOCIAL ORGANIZATION OF TRIBES OF NEW SOUTH WALES.

The social organization of the tribes of the Murray-Darling basin presents certain peculiar features, a fuller knowledge of which is very desirable for any theoretical discussion of the more important problems of Australian sociology. My visit to the Wōgaibon and Murawari tribes was undertaken in the hope that I should be able to supply the missing information. I was only partly successful, and have not since been, and shall not in the future be, able to make a second trip and complete the work. I did, however, succeed in adding something to our knowledge of these tribes.

In the first place, it is now clear that two at least of the tribes of this region possess relationship systems of Type II similar in important respects to those of western, central, and northern Australia, and this makes it probable that the other tribes of the region have systems of the same type. However obscure some of the features of the regulation of marriage in these tribes may still remain, we now know that the fundamental basis of the system is the same as that of the Aranda, Dieri and Marduzunera tribes. That this was so had been stated on several occasions by Mr. R. H. Mathews, but his statement was inadequate because it was not backed up by a knowledge of the system of relationship.

With regard to the blood divisions, I have been able to demonstrate one important, possibly the most important, function. Wherever there is a relationship system of Type II marriage becomes difficult to arrange owing to the excessive limitations imposed by the system. In different parts of Australia we find attempts to get over this difficulty by modifying the system in some way or other. In the Wōgaibon tribe another difficulty is caused by the nature of the totemic clan. How this comes about can be readily explained. There is a tendency, easily perceived in some Australian tribes, and probably present in all, to maintain the unity of the clan as a part of the system of relationship by means of a rule that if an individual stands in a close relation to one member of the clan, then that must determine his relation to all the members of the clan. This tendency can be seen at work in the system of the Yaralde tribe already described in these notes. In that tribe we find localized totemic clans with male descent. In a man's own clan all the men

are "father's father," "father," "brother," "son," or "son's son" to him. In his mother's clan all the men stand in one or other of these relations to his mother, and since the relation of a man to his own mother is a very close one, he is directly related to the whole clan and applies the same term to all the men or all the women of that clan of one generation. He treats in the same way the clans of his own father's mother, his mother's mother, and also those of his father's father's mother and his mother's father's mother. Beyond this limit there is a difference, and the man does not stand in a definite relationship to the clan as a whole, but reckons his relationships to different individuals of the clan. If there were not a limit somewhere then marriage would become altogether impossible, or, if a man was still permitted to marry his mother's mother's brother's daughter's daughter, would be extremely difficult.

In the Wôgaibon tribe we have totemic clans with female descent. There is also some evidence that each horde constituted a local clan with male descent, but not totemic. The number of totemic clans seems to have been very small. Howitt's informant only discovered nine, and I have only been able to add a few to his list. Consequently the clans, or some of them, were very large, and the size of the clans was increased by the fact that the clan system was inter-tribal, extending through a number of tribes, some of which, such as the Kamilarai and Wiradjuri, occupied very large areas of country. That is to say a man was able to claim clan relationship with men of other tribes coming from a country far distant from his own, and speaking a different language.

If we now follow out the results of the tendency to fix the relationship of an individual to a whole clan on the basis of a close relation to one individual of the clan, we see that this would act as a very serious restriction on marriage, which it would not do if there were a large number of smaller clans.

Now the blood division removes this restriction to some extent by splitting each clan into two parts, and confining what we may call clan relationship to one of the parts. Thus the Wôgaibon man whose father was of the Gwaigälir blood of the emu clan thereby found himself in a fixed and definite relationship to all emu Gwaigälir men and women from no matter how distant a part of the country they might come. But with regard to emu Gwaimänzan, there was no general relationship. Those in his own part of the country were apparently related to him through the system of local clans, but those in more distant parts were related to him only through individual relationships traceable through genealogical connections. So that while he might not marry any emu Gwaigälir, and could not marry emu Gwaimänzan of his own part of the country (through the local relationship), he might marry emu Gwaimänzan from a more distant part, always provided that the individual relationship was such as to permit it.

Thus, so far from adding a new restriction upon marriage, the system of blood divisions actually serves to avoid certain restrictions that would otherwise exist.

It would be unsafe to conclude that this is the only function of the blood divisions, but it is certainly one of its functions in the Wógaibon tribe, and I think we are justified in concluding that it is probably one of its functions in the other tribes in which it exists.

I was unable to determine the social functions (if they have any) of the divisions named Īarawān and Muāmbuān in Wógaibon, and Giga and Mandain in Murawari. It was clear to me that they could only be studied satisfactorily in the mythology of the tribes, which it is now, I fear, too late to recover. They are very evidently an essential part of the elaborate system of classification of natural species which exists in these tribes as in so many others of Australia. Such systems of classification are extremely difficult to study, requiring ample time and patience, involving as they do enquiries into natural history and into mythology, and very frequently into language also. The influence of these divisions on the social life would clearly be through the totem clans, and would have to be sought probably in the ceremonial which is no longer in existence. The genealogies that I collected did not serve to throw any light on this matter.

Turning now to the problems relating to the four sections and their inter-marriage, I have been able to establish the important fact that in the Wógaibon tribe the sections are not at all the same thing as they are in some Australian tribes, where they are divisions of the whole tribe, but are divisions of the totem clan, and with relation to the system of relationship the section of a certain name in one clan is not equivalent to the section of the same name in another clan. We have a similar feature in many parts with regard to two neighbouring tribes, the sections in one tribe not being equivalent to the sections of the same name in the other. I have found numerous instances of this in Western Australia, and the Wógaibon and Murawari tribes afford another example.

There is, therefore, no general rule in the Wógaibon tribe regulating marriages between the sections. A man may marry his *guan* wherever she is to be found. If he belongs to the Kābi section of the bandicoot clan, then in the padimelan clan his *guan* are all Īpaṣa, but in the opossum clan his *guan* are Buṣa. He may marry either or both of these without his marriage being in any sense "anomalous."

In a note in *Man*, vol. xvi, 1916, 98, Mr. R. C. E. Long has put forward an interesting hypothesis as to how the peculiar system of marriages in the Wógaibon and Wiraduri tribes, as recorded by Howitt, may have come about, his suggestion being that the section names may have been introduced into these tribes from two different directions at about the same time. The explanation seems to me quite plausible, but I am not able to find any definite evidence in favour of its reality. The information I collected about the sections and the totemic clans and their connection with the system of relationship is not, however, by any means complete, and I think we must be very cautious in the importance we attach to hypotheses based on incomplete information. They are useful, chiefly, for directing research

in the field, and there they may be of very great value. Mr. Long makes no attempt to explain the so-called "anomalous" marriages of the Kamilarai, which were recorded long ago by Ridley, and since they are also a matter of the inter-marriages of certain totem clans it would seem likely that they are due to the same causes as the "anomalous" marriages of the Wôgaibon.

In comparing the tribes of this part of Australia with others there are certain distinguishing features which must be kept in mind in any attempt to understand or explain their social system. The first is the great relative importance and independence of the totemic clans. A second is the freedom of communication that apparently characterized the whole of the eastern half of the Murray-Darling basin. One indication of this is the great extent of such large tribes as the Wiradjuri and the Kamilarai, which may be seen by comparing the area occupied by these two tribes on the map in the first part of these notes with the areas occupied by the tribes on the lower Murray River. There are other indications that point the same way. Connected with this is the extent to which in this region the totemic system has become an inter-tribal organization. It would seem probable that the peculiarities of the social system of these tribes are to a great extent due to the attempt to adjust over a wide area an organization that must certainly (if we are to judge by other parts of the continent) have presented many local differences.

ERRATA IN PART I.

As I was unable to correct the proofs of the first part of these notes, I append a list of errors that escaped notice :—

- Page 224, line 9, after distinguish, add "in Australia."
 .. 225, line 4 from bottom, read "Lake Alexandrina."
 .. 231, line 13, for "Siwurinderar" read "Liwurinderar."
 .. 232, lines 6, 7, and 13, the words "brothers and sisters" should be between inverted commas.
 .. 235, line 22, the words "brothers and sisters" should be between inverted commas.
 .. 236, line 9, for "with the" read "with other."
 .. 237, lines 2 and 3 from bottom, the words "brothers and sisters" should be between inverted commas.
 .. 237, lines 14 and 15, the words "brothers and sisters" should be between inverted commas.

- Page 242, line 6 from bottom, for "*kqribali*" read "*kqrit'balí*."
 „ 243, line 5 from bottom, for "*Waragalup*" read "*waragalup*."
 „ 244, line 25, read ("*markilaky* = two brothers together").
 „ 246, lines 10, 11, and 12 from bottom, read "*Ḑaiyau, Ŋauait, Yirau*."
 „ 247, lines 23 and 24 and lines 32 and 33, page 248, line 6, and page 249,
 lines 12 to 14, should be in small type.
 „ 250, line 4 from bottom, read "*Māti-māti*."
 „ 251, line 17, read "*Lungundararn*."
 „ 252, line 19, for ("*Kom*") read ("*korn*").

THE RELATIONSHIP SYSTEMS OF THE WANGONDE AND WAHENG TRIBES, NYASALAND.

By MEREDITH SANDERSON, M.R.C.S., F.R.G.S.

I.—THE WANGONDE.

1. THE Wangonde are a Bantu tribe inhabiting that part of Central Africa adjacent to the north-west shores of Lake Nyasa. They are a somewhat primitive people, as yet little contaminated by European civilization; they are intensely conservative and their customs differ from those of neighbouring tribes. As a result of this conservatism their system of relationship still bears, in its nomenclature, evidence of its evolution from exogamy in its most primitive form, and of all Nyasaland tribes the Wangonde have probably been least influenced by contact with others. In recent history they were victimized from time to time both by Arab slavers and by the Angoni, but neither appear to have left any trace of their domination. It should be mentioned, however, that the chieftainship was usurped some 10 (?) generations ago by an adventurer who, according to tradition, came from the north-west (towards Tanganyika) and whose descendants still form the ruling caste. It may be that some new customs were introduced at this time, though this is denied by the descendants of the old nobility, who still retain a large share of influence in tribal council.

2. *Definitions*.—LUMBU = "brother"¹ to "sister," or "sister" to "brother." A man calls his elder "brother" *mkuluwangu*; a younger one *nung'una*: the same terms are used by a woman for her "sisters." All children of uncles and aunts are regarded as "brothers" and "sisters," including those of maternal uncle and of paternal aunt; those of father's elder "brother," of mother's elder "sister," and of mother's "brother," are called *wakulu*, irrespective of age.

The term *wamyitu* is often used, irrespective of sex, as alternative for "brother" or "sister"; its real meaning is rather "kinsman," and it may also be used for any relative or connection except the age-classes immediately above or below that of the speaker (e.g., father or son), as it implies a degree of intimacy not permitted with those degrees. *Wamyitu* means "my" (lit. "our") "kinsman"; the second and third persons are *wamyinu* and *wamyao* respectively; there is no singular form.

¹ The use of inverted commas with English terms of relationship indicates that they are used in the full classificatory sense.

MWINANGU ("my compeer"—other forms, *mwina*, "thy" or "one's compeer," *mwinake*, *mwinitu*, *mwininu*, *mwinao*, "his," "our," "your," "their compeer"; plural, *winangu*, etc.). This term is used much as *wamyitu*, but its meaning is slightly different, as it definitely implies equality, and may be applied to a companion as opposed to a relative. When coupled to a term of relationship it has the meaning of "fellow," e.g., *nkasi-mwinangu*, "my fellow-wife"; or it indicates an absence of formality in intercourse with that degree of relationship. Thus *mwisukulu-mwinangu* is always used in preference to *mwisukulu* by itself, and indicates that a grandson is treated as a "brother," a younger "brother," but an equal.

NDAMU is used by a man for men only and by a woman for women only. Of a man the term includes the husbands of his "sisters" and the "brothers" of all women who are his *wakasi*. A woman's *ndamu* are the wives of her "brothers" and the "sisters" of any man whom she calls *ndume*. (See *nkasi* and *ndume*.)

NKOGHO ("thy" or "one's *nko*") is the husband of a daughter, or the parent, male or female, of a wife or husband. Seeing that a grand-daughter is called *nkasi*, it is possible that a man formerly married the daughter of his daughter, and called the husband of his daughter *nkogho* as a potential father-in-law.¹ If this be so, it would suggest that marriage with a son's daughter was not permitted, as the term *nkogho* may be used for either a man or a woman, and a son's wife is always called *nkamwana*, never *nkogho*. The use of the term *nkasi* for the daughter of a son may have arisen subsequently, by analogy, after marriage with a daughter's daughter had fallen into desuetude. A senior *nkogho* (e.g., parent of wife) is usually addressed as *Tata* or *Ywea*, and a son-in-law as *mwamangu*.

MWISUKULU = any grand-relation, male or female: it includes grandfather and grandmother, grandson and grand-daughter. A male *mwisukulu* is called *mwinangu* by a man and *ndume* by a woman; a female *mwisukulu* is called *nkasi* by a man and *mwinangu* by a woman. (See also para. 3 (4) below.)

NYENYA (cf. the ChiHenga word *nyenye* = "far") is a great grand-relation, male or female, senior or junior.

NKATINKATI similarly is a great-great-grand-relation of any kind.

NKASI includes wife of a "brother," uterine or otherwise; female *wisukulu*, including wives of "grandsons" and of "grandfathers," but excluding "grand-daughters" of wife; all "sisters" of a wife; daughters of a wife's "brothers"; wives of "grandsons" by marriage, and the "grandmothers" of a wife; wife of maternal uncle; and, of course, own wife.

Similarly **NDUME** includes husband of a "sister"; male *wisukulu* including husbands of "grand-daughters" and of "grandmothers"; all "brothers" of a husband; sons of all "sisters" of a husband; husband of father's "sister";

¹ Mrs. Seligman called to my notice a similar possibility among the WaYao, and I am indebted to her for the suggestion.

husbands of "grand-daughters" by marriage (but not "grandsons" by marriage); the "grandfathers" of a husband; and own husband.

TATA includes own father, his "brothers" and "sisters," and the husband of father's "sister"; also husband of mother's sister. By courtesy the term is used for all "fathers" of a wife or husband (instead of *nkogho*), or to any superior in station or age, whether related or not.

YUWA (mother) includes own mother, her "brothers" and "sisters" the wives of the father's "brothers" and the wives of a woman's maternal uncle. The term may also be used for the mothers of a wife or husband, or as a mere term of respect.

These terms (TATA and YUWA) are used only in speaking of one's own fathers or mothers, the possessive adjective, "my" or "our," being invariably omitted. For other persons, the old Bantu words WISE and NYINA are substituted; e.g., *ghuso*, *uwise*, *uwisemwe*, *uwisao* ("thy," "his," "your," "their father"), plurals *awatata*, *awauso*, *awawise*, etc. ("my" or "our," "thy," "his fathers," etc.). So *unyoko*, *unyina*, *unyinemwe*, *unyinawo* ("thy," "his," "your," "their mother"), plurals *awayuwa*, *awanyoko*, *awanyina*, etc. ("my" or "our," "thy," "his mother").

MWANA = son or daughter, including, of course, those of "brothers" and "sisters," and of wife.

NKAMWANA, obviously derived from *nkazi wa mwana* ("wife of a son"), may be used by either a man or a woman for that degree of relationship.

MWECHANISI (= *mu-egha-na-uswe*, "marry with us," from *kwegha*, "to marry") or KITWASI (= *Ki-twala-na-uswe*, "marry with us," from *kutwala*, "to marry"). The former is said to be a *Kinyakyusa* word,¹ now in general use, and the latter the old *Kingonde* word; either may be used to denote a paramour of one's wife, and as a result the term *mwianangu* is usually added when referring to a husband of the speaker's potential wife, which is its special meaning, in order to deprive it of any suggestion of offence.

NKASI-MWINANGU ("my fellow-wife") is the corresponding term used by a woman for the wife of a potential husband, but it is not generally used among the potential wives of a man, as such. The actual wives of a man, however, refer to each other by means of this term, and to their husband's potential wives.

NASENGE denotes a father's sister of either a man or a woman, and reciprocally a "brother's" child of a woman. It probably has reference to the right of marriage possessed by a man with the daughter of his wife's "brother." (See para. 3 (3) below.)

MWIRWA includes mother's brother and sister's son or daughter of a man, and mother's brother of a woman. A woman calls her sister's son *ndume*. (See para. 3 (6) below.)

¹ The Waanyakyusa are a tribe racially allied to the Wankonde, and inhabiting neighbouring territory.

MWIKO is very nearly a translation of the word *tabu*, and may be used either of things or of forbidden degrees of relationship.

3. The following points are noteworthy :—

- (1) The wife of a "brother," whether older or younger, uterine or not, is called by the same term (*nkasi*) as a wife. I am informed that sexual intercourse, though not countenanced, is not uncommon, and such cases are apt to be treated leniently should they come to (native) court. This might be regarded as evidence of former "group marriages," but it should be noted that a man's first heir is his brother, who succeeds to the wives in common with the rest of the "property."

The same term (*ndume*) is used by a woman for the "brothers" of her husband as for the husband himself, and their wives are *wakasi-winake* (= "her fellow-wives").

- (2) The "sisters" of a wife are also called *nkasi*. The husband of the eldest of a family has a prior right to marry her uterine sisters, and a semi-right to her other "sisters"; such marriages are very common. Any man who marries a woman to whom another has a prior right becomes *mweghanisi* (or *kitwasi*) to the ousted one. (See Definitions.) Reciprocally a woman calls her "sister's" husband *ndume*, even after her marriage to another.
- (3) A man has the right to marry the daughter of his wife's "brother" as among the Thonga,¹ and the wife of the wife's "brother" is called *nkogho* (see Definitions); the son of the wife's "brother" is often called *ndamu* instead of *mwana*. There is a special term for a father's sister, which is reciprocally used by a woman for her "brother's" daughter; the term *nkasi-mwinangu* (= "my fellow-wife") does not appear to be used by her unless and until her husband actually marries the girl. This special term is *nasenge*, and it can hardly be mere coincidence that it so closely resembles the Nandi term *senget* for father's sister² (*na-* being a common Bantu prefix, usually honorific, and, on the other hand, the terminal *-t* merely formative).

A woman calls the son of her husband's "sister" *ndume*. (See para. (6) below.)

- (4) All "grand-daughters," except those by marriage, are called *nkasi*, but marriage has never been allowed within living memory; the husband of these "grand-daughters" are called *mweghanisi* (*kitwasi*). A "grandson" is not called *ndamu* but (*mwisukulu*) *mwinangisi* (= "my compeer");

¹ R. Z. Seligman, "The relationship systems of the Nandi, Masai and Thonga, *Man*, April, 1917, 46 (quoting Junod).

² Seligman, *loc. cit.*, quoting Hollis, "The Nandi."

his wife is called *nkasi*, like the wife of a "brother," not *nkogho*. This appears to be the result of the law that a man may have to marry his "grandmothers." (See para. 5.)

Similarly a woman calls her "grandson" *ndume*, and his wife *nkasi-mwinangu*.

No distinction is made between the offspring of a "son" and that of a "daughter," either by a man or a woman.

"Grand-daughters" by marriage are not called *nkasi* by a man, nor are "grandsons" by marriage called *ndume* by a woman: the term *mwisukulu-mwinangu* is used in either case. It is of interest to note, however, that the wives and husbands of these relations are called *nkasi* and *ndume* respectively, which is evidently a relic of the period when the whole tribe was divided into two classes, marriageable and unmarried: since a "grandchild" by marriage belonged to the latter class, his or her spouse must be included in the former.

- (5) All "grandmothers" are termed *nkasi*, except perhaps the sisters of the paternal grandfather; some say that these should be classed as "sister," as the sister of one's *mwinangu* (grandfather), because *nkasi* would not be polite to the *nasenge* of one's father. Others deny this and include all grandmothers as *nkasi*, and it is doubtful whether the objection is not modern. The same applies to the "grandmothers" of a wife.

A man often has to marry his "grandmothers" on the death of his "grandfather," though if the latter were a chief or a rich man the heir would probably marry them as part of the property. The rule appears to be that it is the duty of any man to marry his "grandmothers" if they are destitute.

A woman calls all her "grandfathers" *ndume*, though actual marriage is not permitted. It is difficult to say whether this is due to analogy with the relationship of a man to his "grandmother," or is the corollary of that to his "grand-daughter." Since marriage with a "grand-daughter" is not uncommon in other tribes, it may be that it was originally the reason for a woman calling her grandfather *ndume* among the Wangonde, but that the persistence of the terminology after such a marriage came to be regarded as incestuous is partly due to analogy.

As a result of the similarity of relationship between grandparents and grandchildren the same term *mwisukulu* is used for both. There was formerly a special term for grandparents (*mbuya*), but it is now obsolete.

- (6) The relationship between mother's "brother" and "sister's" son is peculiar, in that the term is used reciprocally (*mwipua*). A man calls the wife of his

maternal uncle *nkasi*, and she calls him *ndume*. As a sister's son comes very low down in the table of succession, this cannot be due to their prospective relationship should the maternal uncle die, and it may be that the relationship of husband's sister's son is (or was) regarded as analogous to that of wife's brother's daughter. On the other hand, if the father of X exercises his right to marry his wife's brother's daughter, this girl, from being the "sister" of X, becomes his "mother," and her mother (the wife of X's maternal uncle) becomes his "grandmother" and therefore his *nkasi*.

- (7) Cross-cousins are classed as "brothers" and "sisters," and all first cousins are, therefore, unmarriageable.
- (8) It is of interest to note that a kind of marriage by capture is still in vogue among the Wangonde. It may be performed either with or without the consent of the woman, but, except in the case of a woman to whom the man has a right by relationship, her father's sanction is necessary, and at least part of the dowry must be paid beforehand: usually, the woman is aware that the marriage has been proposed.

The bridegroom, assisted by some friends, either lies in wait for the woman, on the way to the water-supply for instance, or decoys her out of the village by means of a spurious message, and carries her off to his home. Her relatives would be bound in honour to rescue her if the bridegroom were so maladroit as to make it impossible for them to affect ignorance of the abduction. It is said that the marriage is sometimes consummated by force with the assistance of the companions of the bridegroom: in any case, a small present to the girl personally is necessary before consummation.

4. *Succession*.—The order of succession is liable to modification if the legal heir is considered unsuitable for any reason. The relationships are put in the following order of precedence:—

- (1) Younger brother by same father and mother.
- (2) Younger brother by same father and different mother.
- (3) Any younger "brother."

Note.—It would be considered *infra dig.* for an elder "brother" to take the name of his junior, so that, although he has a prior right to the property, he would appoint a younger "brother" to the name. In such a case he may choose which of the "wives" of the deceased he likes, in addition to the cattle.

- (4) Eldest surviving son (own begetting).
- (5) Eldest son of elder brother (by the same father).
- (6) Eldest son of younger brother (by the same father).

- (7) Eldest *mutipwa*, i.e., eldest son of eldest sister.
- (8) Eldest son of a younger sister.
- (9) Eldest grandson of the father's elder brother.
- (10) Eldest grandson of the father's younger brother.
- (11) Eldest grandson of the father's sister.
- (12) Eldest grandson of the mother's sister.
- (13) Eldest grandson of the mother's brother.
- (14) Eldest grandson of the eldest brother by the same mother (not father).
- (15) Eldest son of own son or daughter.
- (16) Eldest grandson of a younger brother.
- (17) Eldest grandson of a sister.

5. All *nkogho* must be "feared," i.e., avoided on all occasions; a woman must cover her head if unavoidably in their presence. These rules do not differ greatly from those found in other parts of the world, except that a man's "fear" of his wife's mother is greatly lessened after the birth of a child to the couple. They have to be much more strictly observed by a woman than by a man.

II.—THE WAHENGGA.

1. The term *WaHenga* is somewhat loosely applied to a group of Bantu peoples living to the south of the Wangonde, and is often used as synonymous with *WaTumbuka*, *Wakamanga*, and *WaPoka*. It is adopted here for convenience, though properly only applicable to those living in the valley of the S. Rukuru River, often called the Henga Valley; the word *henga* means "chief" in some Bantu languages, but the valley is said to have been named after a chief who settled in it.

The information detailed here as to relationships has been derived from natives whose birthplace is the Nkhamanga plains to the north of the S. Rukuru River and west of the "Henga Valley," but as far as has been ascertained it applies equally to the rest of the group. These people prefer to be called *Wakamanga*, and they have a tradition that their forefathers came from the East across the Lake (Nyasa); they are now, however, so mixed by inter-marriage with the other small groups mentioned above that the practice of including them all under the term *WaHenga* has been followed here.

2. *Definitions*.—*MDUMBU* = "brother" to "sister," or "sister" to "brother." An elder "brother" is *MEKULU*, a younger one *MNUNG'UNA*, of a man: the same terms are used by a woman of her "sisters." The children of the father's elder brother are called *WAKULU* irrespective of age, as also those of the mother's elder sister.

MWANAMNYANE ("my fellow-child," other forms *MWANAMNYINU*, *MWANAMYAKE*, etc., "your" "his fellow-child"). This term is often used as equivalent to "brother" or "sister" by either a man or a woman.

MNYANE ("my companion" or "compeer"; other forms MNYAKO, MNYAKE, MNVITU, MYNINU, MNYAWO, "thy," "his," "our," "your," "their companion," or "compeer"). This term may be used either by itself or suffixed to various terms of relationship; alone it means merely "a companion," without much reference to seniority either in rank or age, except that it would not be used by a junior to a senior. In conjunction with terms of relationship it definitely implies equality and absence of formality in intercourse; with reference to one of the same generation as the speaker it indicates community of relationship, e.g., *muwoli-mnyane*, "my fellow-wife"; used of one belonging to the second generation above or below that of the speaker, it implies that those classes are regarded as equals.

MLAMU is the wife or husband of a "brother" or "sister" or the "brother" or "sister" of a wife or husband; it therefore conveys no indication of sex, whether the speaker be man or woman. When used by a man of a woman, however, it is equivalent to wife, and a male *mlamu* of a woman is her potential husband.

MKWENI is used exclusively for the husband of a daughter: it is the reciprocal term for *tatavyara* or *mamavyara* (q.v.).

TATAVYARA and MAMAVYARA are evidently short for *tata wa nyara* and *mama wa nyara* respectively, meaning "father (or 'mother') of a potential or actual wife or husband." The Angoni use the terms WAWAZARA and MAMA-ZARA for the same relationships, and the Wasisa (a branch of the Atonga) call both father and son-in-law *mkweni*. The word TATA is used by the WaTumbuka division of the Henga group in preference to DADA, but there is a good deal of variation among the WaHenga in general. The word *zara* in ChiNgoni means "bear" or "beget," and it would appear that the WaHenga have adopted the word from them, but, without understanding its etymology, have treated it as if it were an adjective (*zi-ara*) and substituted their own adjectival prefix *vi-*, making *vyara*; there is no verb *ku-ryara* in ChiHenga.

It would seem probable, therefore, that formerly the WaHenga used the term *mkweni* reciprocally for "father-in-law" and "son-in-law," and that they have lost their original word for cross-cousin.¹

The term *tatavyara* is used only for relatives by marriage, and includes father of wife, his "brothers" and the husbands of his "sisters," wife's mother's "brothers," and the husbands of wife's mother's "sisters."

Mamavyara includes mother of wife, her "sisters" and the wives of her "brothers," wife's father's "sisters" and the wives of wife's father's "brothers." Also the wife of any "brother" of A's wife is called *mamavyara*, as the potential mother of a woman whom he has a right to marry, and the wife of the son of A's wife's "brother" as the wife of a potential wife's brother, and therefore the potential mother of a wife—the extent of the process is limited only by "man's allotted span."

¹ The ChiTonga word for "cross-cousin" is the same as the ChiYao *msicani*. The Wasisa use the same word as the WaHenga, *nyara*.

The wife of A's wife's *myara* is often called *mamavyara* by analogy, but A cannot marry her daughter, and the relationship is more correctly *muwoli*, as her husband had the right to marry A's wife; A calls her children his children.

MYARA is a cross-cousin, male or female (see *tatavyara*, above).

MZUKULU = grandchild.

A grand-daughter is called *muwoli* ("wife"), and her husband *mzomoti-mnyane*, but marriage between a man and his grand-daughter is not permitted. A woman calls her grandson *mfama*, and his wife *muwoli mnyane*. A man calls his grandson's wife *muwoli*, like the Wangonde.

A great-grandchild is called *Mzukul-Chivu* (*chivu* = "grey hair"), and a great-great-grandchild is MZUKULU-NYENYE (*nyenye* = "distant"). A great-great-grandchild is always picked up with its back towards one, because its very existence implies that one has lived quite long enough, and a direct look from it would be fatal.

SEKULU = grandfather, and BUYA = grandmother; both are usually given the honorific plural prefix WA-. A grandmother is called *muwoli* as among the Wangonde, but marriage is not allowed.

The terms CHIVU and NYENYE are used with *sekulu*, as with *mzukul*, for great and great-great-grandparent.

MUWOLI includes female cross-cousins and those of wife, all "grand-daughters" and those of wife, wives of "grandsons," including those of wife's "grandsons," all grandmothers and those of wife, all "sisters" of wife, all wives of "brothers," the daughters of wife's "brothers," and the wife of maternal uncle. Of these, the true relationship is *mlamu* of all except grand-relations, cross-cousins, and wife's "brothers" daughter.

Similarly, MFUMU ("husband") includes male cross-cousins and those of husband, all "grandsons" and those of husband, husbands of "grand-daughters," all grandfathers and those of husbands, all "brothers" of husband, all husbands of "sisters," the sons of husband's "sisters," and the husband of father's "sisters."

DADA ("father," dialectically TATA) = own father and his "brothers" and "sisters," the husband of a man's father's "sister," and the husband of mother's "sister."

MAMA ("mother") includes own mother, her "brothers" and "sisters," the wife of father's "brother," and the wife of a woman's maternal uncle.

TATA and MAMA are also used indiscriminately as terms of respect, but DADA always retains its specific meaning.

As in Kyungonde the terms *dada* (*tata*) and *mama* mean always "my" ("our") "father" or "mother," the possessive adjective being omitted. For other persons the following forms are used:—*wanyoko*, *wanyina*, *wanyinamwe*, *wanyinawo*, "thy," "his," "your," "their mother." *Wawuso*, *wawise*, *wawisemwe*, *wawisewo*, "thy," "his," "your," "their father."

MWANA = son or daughter, including those of "brothers" and "sisters" as well as of cross-cousins, and the same relations of wife or husband.

MKAMWANA would appear to have been borrowed from the Kyangonde *Nkamwana* = *nkazi wa mwana*, and is used for the same relationship—son's wife. The ChiTonga word is *mkumwana*, and it is possible, ChiTonga being much more closely allied to ChiHenga than Kyangonde, that the original ChiHenga word was similar, the U of *mkumwana* having become A by association with the Wangonde. The origin of the word *mkumwana* is not obvious, the ChiTonga word for wife being the same as the ChiHenga (*muwoli*).

MZOMOZI means literally "an adulterer," but, with the word *manyane* to deprive it of offence, is used to denote one who has married A's potential wife. Its etymology is obscure; the Wasinya use it only in its literal sense, the husband of a potential wife being called *mlowezi*, the ChiTonga word.

MUWOLI-MNYANE ("my fellow-wife") is used by a woman to denote the wife of her potential husband, and the potential wives of her husband.

WANKHAZI = the father's sister of either a man or a woman. A woman calls her brother's daughter (not son) MSENGEZYANA (from *kuzengezyana*, "to build near each other"), because she is the natural wife of that woman's husband.

MUPWA = the child of a man's "sister" (see para. (6) above).

MBILIGRA = any woman whom a man acquires a right to marry by virtue of marriage. It includes all "sisters" of his wife, her female *wavyara*, and the daughters of her "brothers."

3. It will be seen at once that there is a strong family resemblance between this relationship system and that of the Wangonde:—

(1) As with the Wangonde, the same term (*muwoli*) is used for own wife and for the wife of a "brother," and a woman calls the "brothers" of her husband *mfumu*—the same term being used for husband—their wives being *wawoli-wanyake* (= "her fellow-wives").

(2) So with a wife's "sisters," they are also called *muwoli*, and should one of them marry another he is called *mzomozi*, a term equivalent to *kitucasi* or *murghanisi*. A woman uses the same term (*mfumu*) for her husband and the husbands of her "sisters."

(3) A man has the right to marry the daughter of his wife's "brother"; he therefore calls her *muwoli* and her mother *mamavyara* (see Definitions). The son of a wife's "brother" is called *mlamu* instead of *mwana*, and his wife is *mamavyara*, because she is the wife of a potential wife's "brother"; if, however, marriage with the wife's "brother's" daughter fails to materialize for any reason, both she and her "brother" may be called *mwana*, and the wife of the latter *mkamwana*.

Father's "sister" is called *wankhazi*, the reciprocal term for a woman's "brother's" daughter being *msengezyana*.

- (4) As among the Wangonde, any "grand-daughter" and the wife of any "grandson" are called by the same term as a wife (*muwoli*). The term *mkulu* is in common use in address, often together with the word *nyane* (= "my compeer"); the husband of a "grand-daughter" is called *mzomzi-nyane* by a man and *mfumu* by a woman. A woman calls her "grandson" *mfumu* and his wife *muwoli-nyane* (= "my fellow-wife"). No distinction is made between the children of a son and those of a daughter, nor, unlike the Wangonde, between own "grand-children" and those of a wife. Marriage between a man and his "grand-daughters" is unknown.
- (5) All "grandmothers," and those of a wife, are called *muwoli*, including the wives of "grandfathers." Similarly, a woman calls her "grandfathers" and those of her husband *mfumu*. A "grandfather" is termed *sekulu*, more often *asekulu* (honorific plural); a "grandmother" *buga* or *ibuya*.
- (6) A maternal uncle is called *mamalume* (= "male mother") and his wife *mlamu* or *muwoli*. The child of a "sister" is called *mupua*. A male *mupua* has special privileges and is regarded as an equal; he may sit on the same mat as his *mamalume* and eat with him, while all other "children" of the *mamalume* call him *dada*, and their wives are "afraid" of him.

Though the relationship is really *mkamwana* (= wife of a son), the wife of a *mupua* is frequently addressed as "*muwoli wane*," as if she were the wife of a "brother."

A female *mupua*, on the other hand, is treated as a daughter and her husband is called *Mkwenti*, like the husbands of all "daughters." Only a man calls the children of his sister's son *mupua*; a woman calls them her children.

- (7) Unlike the Wangonde, the WaHenga differentiate between "cousins." Cross-cousins are called *Wavyara* (sing. *Mvyara*), women being regarded as wives, and addressed as such. A man has a prior right to his female *wavyara*, marriage with those of the mother's side being preferred. Latterly, however, possibly owing to association with the Wangonde the WaHenga tend to prefer to marry the offspring of the more distantly related "sisters" of the father, or "brothers" of the mother, rather than the daughters of the father's uterine sister, or of the mother's uterine brother.
- (8) The husband of the WANKHAZI of A's wife is his *tatavyara*, but might be called *mzomzi nyane* by virtue of being the potential husband of the sister of A's wife.

The husband of a woman's *wankhazi* is her *mlamu*, i.e. she calls him *mlamu*, after her marriage to another man, because he is the potential husband of her "sister." Similarly, a man may call the husband of his *wankhazi*, *mlamu*, for the same reason.

4. *Succession*.—As among the Wangonde, the rules of succession are liable to modification if the legal heir be considered unsuitable for any reason. The normal order of precedence is as follows :—

- (1) Younger (uterine) brother.
- (2) Other "brothers" in order of seniority.
- (3) Own son.
- (4) Son of a uterine brother.
- (5) Son of a uterine sister.
- (6) Son of paternal uncle's daughter.
- (7) Son of maternal aunt's daughter.
- (8) Son's son.
- (9) Daughter's son.
- (10) Grandsons of uterine brother.
- (11) Great-grandsons of paternal uncle.

[NOTE.—Several tables were prepared by the author to illustrate the application of the relationship terms defined in this paper. These tables are available for consultation at the Institute.—ED.]

MISCELLANEA.

PROCEEDINGS OF THE ROYAL ANTHROPOLOGICAL INSTITUTE, 1923.

January 23rd, 1923.

Annual General Meeting. (See p. 1.)

January 16th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Dr. F. C. SHRUBSALL in the Chair.

The minutes of the last meeting were read and accepted.

The election of the following as Ordinary Fellows of the Institute was announced :

Mr. Alexander Low, Mr. G. Morant, Mr. J. H. B. Murphy, Mrs. B. Z. Seligman, Miss Tildesley and Dr. T. Walmsley.

An exhibition of Steatite Heads was made by Mr. W. ADDISON.

The exhibit was discussed by Mr. H. J. BRAUNHOLTZ and Mr. F. W. H. MIGEOD.

Mr. F. W. H. MIGEOD read his paper on "The Bedde Group of Tribes of Northern Nigeria," illustrated by lantern slides.

The paper was discussed by Dr. SHRUBSALL, Dr. H. S. HARRISON, Miss MURRAY, Mr. PARKYN, Mr. BRAUNHOLTZ and Miss WERNER, and Mr. MIGEOD replied.

A hearty vote of thanks was accorded to Mr. ADDISON for his exhibit, and to Mr. MIGEOD for his interesting paper, and the Institute adjourned till January 23rd.

February 6th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Mr. H. J. E. PEAKE in the Chair.

The minutes of the last meeting were read and confirmed.

Major OWEN RUTTER read his paper, "The Natives of British North Borneo," illustrated by lantern slides.

The paper was discussed by Mr. PEAKE, Mr. RAY, Mr. BRAUNHOLTZ, Dr. SHRUBSALL, Mr. PARKYN, Col. SHAKESPEAR and Major GARRETT, and Major RUTTER replied.

A hearty vote of thanks was accorded to Major RUTTER for his interesting paper, and the Institute adjourned till February 20th.

February 20th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Prof. J. L. MYRES, Vice-President, in the Chair.

The minutes of the last meeting were read and confirmed.

The election of the following as Ordinary Fellows of the Institute was announced :
Lieut. A. E. J. Hunter, Mr. A. B. Matthews, Mrs. L. M. B. Voge and Prof. Hutton Webster.

Prof. P. E. NEWBERRY read his paper on "The Sed Festival."

The paper was discussed by Dr. E. M. GUEST, Miss MURRAY, Mr. HORNBLOWER, Mrs. ELLIS, Miss AITKEN and Miss RUTHERFORD, and Mr. NEWBERRY replied.

A hearty vote of thanks was accorded to Prof. NEWBERRY for his valuable and interesting paper, and the Institute adjourned till March 13th.

March 13th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Mr. H. J. E. PEAKE in the Chair.

The minutes of the last meeting were read and confirmed.

Miss M. E. DURHAM read her paper, "Birdmen and Related Customs in the Balkans," illustrated by lantern slides and exhibits.

The paper was discussed by Miss MURRAY, Mr. SEPTON JONES, Mr. TORDAY and Mr. PEAKE.

A hearty vote of thanks was accorded to Miss DURHAM for her most interesting paper, and the Institute adjourned till March 27th.

March 27th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Mr. H. J. E. PEAKE in the Chair.

The minutes of the last meeting were read and confirmed.

The election of the following as Ordinary Fellows of the Institute was announced :
Dr. Cyril Fox, Mr. W. J. Perry and Mr. Canning Suffern.

At the request of the lecturer, Prof. Barthold, the HON. SECRETARY read his paper, "The Nomads of Central Asia."

The paper was discussed by Mr. DUDLEY BUNTON, Dr. SHRUBSALL, Mr. SEPTON JONES and Mr. PEAKE, and the lecturer replied.

A hearty vote of thanks was accorded to Prof. BARTHOLD for his interesting and valuable paper, and the Institute adjourned till April 17th.

April 17th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Dr. F. C. SHRUBSALL in the Chair.

The minutes of the last meeting were read and confirmed.

The election of the following as Ordinary Fellows of the Institute was announced : Mr. E. J. Bennett, Mrs. F. C. Johnston, Miss W. C. King and Mr. Rama Pisharoti.

Miss TYRA DE KLEEN read her paper on "The Ceremonial Dances and Magic Rites of the Island of Bali, Dutch East Indies," illustrated by lantern slides.

The paper was discussed by Dr. SHRUBSALL, Mr. BARNARD and Mr. DUDLEY BUXTON, and Miss DE KLEEN replied.

A hearty vote of thanks was accorded to Miss DE KLEEN for an interesting paper and the Institute adjourned till May 1st.

May 1st, 1923.

Ordinary Meeting at 50, Great Russell Street.

Mr. H. J. E. PEAKE in the Chair.

The minutes of the last meeting were read and confirmed.

Mr. V. GORDON CHILDE read his paper on "The Neolithic Painted Pottery of South Eastern Europe," illustrated by lantern slides.

The paper was discussed by Mr. PEAKE, Mr. PARKYN and Dr. HARRISON, and Mr. CHILDE replied.

A hearty vote of thanks was accorded to Mr. CHILDE for his valuable and interesting paper, and the Institute adjourned till May 15th.

May 15th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Dr. A. C. HADDON, Past-President, in the Chair.

The minutes of the last meeting were read and confirmed.

The election of the following as Ordinary Fellows of the Institute was announced : Mr. H. E. J. Biggs, Mr. R. H. Ellis, Mrs. H. A. Grey and Mr. D. Phillips.

Mr. J. H. P. MURRAY read his paper on "Native Administration in Papua."

The paper was discussed by Dr. HADDON, Mr. WALKER, Mr. W. E. ARMSTRONG, Capt. SETON-KARR, Dr. RUSHTON PARKER, Mr. RAY, Mr. PARKYN, Mr. BRAUNHOLTZ, Mr. HUNT and Mr. KILBURN SCOTT, and Mr. MURRAY replied.

A hearty vote of thanks was accorded to Mr. MURRAY, and the Institute adjourned till June 12th.

June 12th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Dr. F. C. SHRUBSALL in the Chair.

The minutes of the last meeting were read and confirmed.

Rev. W. H. LEEMBRUGGER read his paper on "Social Transitions among the Natives of New Georgia, Solomon Islands," illustrated by lantern slides and specimens.

The paper was discussed by Dr. SHRUBSALL, Mr. RAY, Mr. and Mrs. SCORESBY ROUTLEDGE and Mr. PARKYN, and Mr. LEEMBRUGGER replied.

A hearty vote of thanks was accorded to Mr. LEEMBRUGGER, and the Institute adjourned till June 19th.

June 19th, 1923.

Special Meeting at 50, Great Russell Street.

Mr. H. J. E. PEAKE in the Chair.

The meeting being a special one, there was no business to transact.

Prof. P. G. H. BOSWELL dealt with the Flint Implements at Foxhall Road, Ipswich, from the geological point of view, and Mr. REID MOIR described the implements found in the various beds.

The papers were discussed by Prof. SOLLAS, Mr. SLATER, Miss LAYARD, Mr. BERRY, Mr. DE BARRI CRAWSHAY and Mr. PEAKE, and Prof. BOSWELL and Mr. REID MOIR replied.

A hearty vote of thanks was accorded to Prof. BOSWELL and Mr. REID MOIR for their interesting and valuable papers, and the Institute adjourned till June 26th.

June 26th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Mr. H. J. E. PEAKE, in the Chair.

The minutes of the last meeting were read and confirmed.

The election of the following as Ordinary Fellows of the Institute was announced : Prof. C. Brash, Mr. V. Gordon Childe, Mr. G. A. Gardner, Capt. J. R. Wilson Haffenden, Mr. G. D. Hornblower, Mr. James Johnstone, Dr. Andrew A. Kerr, Mr. F. A. Mitchell Hedges, Mr. J. H. P. Murray, Rev. David Paul, Mr. H. Proost and Mr. L. E. Tristram.

Mr. PEAKE announced that owing to illness Mr. DE BARRI CRAWSHAY was unable to be present or to exhibit the Eoliths from South Ash Pit and the Stone Implements from Mesopotamia.

Mr. G. W. MURRAY exhibited a Chert Implement of unusual form from Egypt.

Mr. HAZZLEDINE WARREN read his paper on "The Palaeolithic Succession of Stoke Newington," illustrated by specimens.

The paper was discussed by Mr. HAYWARD, Mr. PARKYN, Mr. SCHWARTZ and Mr. PEAKE, and Mr. WARREN replied.

A hearty vote of thanks was accorded to Mr. WARREN, and the Institute adjourned till July 17th.

July 17th, 1923.

Special Meeting at 50, Great Russell Street.

Prof. C. G. SELIGMAN, President, in the Chair.

The meeting being a special one, there was no business to transact.

Dr. D. E. DERRY read his paper on "The Discovery of Fossil Human Bones in Egypt, possibly of Pleistocene Age," illustrated by lantern slides and the bones found by Mr. GUY BRUNTON.

The paper was discussed by the PRESIDENT, Sir FLINDERS PETRIE, Sir ARTHUR KEITH, Mr. BRUNTON, Prof. J. CUNNINGHAM, Mr. LENNAN and Dr. GARSON, and Dr. DERRY replied.

A hearty vote of thanks was accorded to Dr. DERRY for his valuable and interesting paper, and the Institute adjourned till the autumn.

October 16th, 1923.

Special Meeting at 50, Great Russell Street.

Prof. C. G. SELIGMAN, President, in the Chair.

The meeting being a special one, there was no business to transact.

Prof. NEWBERRY read his paper on the "Origin of Cultivated Plants."

The paper was discussed by Dr. STAFF, Sir DAVID PRAIN, Dr. BRENCHELEY, Dr. BRIERLEY, Mr. RAY and Dr. RUSHTON PARKER, and Prof. NEWBERRY replied.

A hearty vote of thanks was accorded to Prof. NEWBERRY, and the Institute adjourned till October 23rd.

October 23rd, 1923.

Special Meeting at the Royal Society, Burlington House.

Prof. C. G. SELIGMAN, President, in the Chair.

The meeting being a special one, there was no business to transact.

Mr. F. A. MITCHELL HEDGES read his paper on the "Discovery of an Unknown Race. The Culture of the Chucanaque Indians of Central America," illustrated by exhibits.

The paper was discussed by Mr. CLARKE, Mr. BEASLEY, Lieut.-Col. PEACOCK, Mr. PARKYN, Dr. HARRISON, Mr. McLELLAN MANN and the PRESIDENT, and Mr. MITCHELL HEDGES replied.

A hearty vote of thanks was accorded to the Lecturer, and the Institute adjourned till November 6th.

November 6th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Prof. C. G. SELIGMAN, President, in the Chair.

The minutes of the last meeting were read and accepted.

Miss M. A. MURRAY described her "Excavations in Malta."

The paper was discussed by Mr. PEAKE, Mr. CHILDE,* Mr. GARPITT and the PRESIDENT, and Miss MURRAY replied.

A hearty vote of thanks was accorded to Miss MURRAY for her valuable paper, and the Institute adjourned till November 20th.

November 20th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Prof. C. G. SELIGMAN, President, in the Chair.

The minutes of the last meeting were read and confirmed.

The election of the following as Ordinary Fellows of the Institute was announced :

Mr. G. Chisholm, Mr. M. B. Clappé, Sir Howard Elphinstone, Capt. J. C. Martin, Miss E. A. McLean, Prof. Roxby and Major H. J. Selby.

Mr. L. H. DUDLEY BUXTON read his paper on the "Inhabitants of Inner Mongolia," illustrated by lantern slides.

The paper was discussed by Mr. H. J. E. PEAKE and the PRESIDENT, and Mr. BUXTON replied.

A hearty vote of thanks was accorded to Mr. BUXTON for his valuable and inspiring paper, and the Institute adjourned till November 27th.

November 27th, 1923.

Special Meeting at the Royal Society, Burlington House.

Mr. H. J. E. PEAKE in the Chair.

The meeting being a special one, there was no business to transact.

Dr. E. H. HUNT read his paper on "Hyderabad Cairn Burials and Their Significance," illustrated by specimens and lantern slides.

Prof. J. L. MYRES read extracts from Mr. F. J. RICHARDS' paper, "Notes on some Iron Age Graves at Odugattur, North Arcot District, South India," and discussed the two papers.

Questions were asked of Dr. HUNT by Mr. and Mrs. ROUTLEDGE, Mr. PARKYN, Sir CHARLES BAILEY and Mr. PEAKE, to which he replied.

A hearty vote of thanks was accorded to Dr. HUNT for his very interesting and valuable paper, and the Institute adjourned till December 4th.

December 4th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Prof. C. G. SELIGMAN, President, in the Chair.

The minutes of the last meeting were read and confirmed.

Mr. HENRY BALFOUR read his paper on "Observations on the Technology of the Nagas of Eastern Assam," illustrated by specimens and lantern slides.

The paper was discussed by Dr. HARRISON, Capt. FULLER, Mr. BRAUNHOLTZ and the PRESIDENT, and Mr. BALFOUR replied.

A hearty vote of thanks was accorded to Mr. BALFOUR for his valuable and interesting paper, and the Institute adjourned till December 11th.

December 11th, 1923.

Ordinary Meeting at 50, Great Russell Street.

Dr. F. C. SHRUBSALL in the Chair.

The minutes of the last meeting were read and confirmed.

The election of the following as Ordinary Fellows of the Institute was announced :

Miss Victoria Cobb, Mr. J. C. Flügel, Mr. G. W. Hatchell, Mrs. Susan Isaacs, Dr. B. Malinowski, Mr. A. S. Parkes, Miss Barbara J. Rutherford, Mr. Paul Shuffrey, Mr. A. C. Swayne and Mr. M. D. Thakore.

Mr. G. HEWETT read his paper on "The Dusun of British North Borneo."

The paper was discussed by Mr. BALFOUR, Mr. BRAUNHOLTZ and Mr. EDGELL, and Mr. HEWETT replied.

A hearty vote of thanks was accorded to Mr. HEWETT, and the Institute adjourned till January 8th, 1924.

Notes on Native Customs in the Baniara District (N.E.D.), Papua.

Based on J. G. FRAZER's Questions.

Compiled by A. LISTON-BLYTH, Assistant Resident Magistrate.

1. FROM BAKU on Tawakururu inlet to MUKAWA on Cape Vogel, the people belong to the ARI tribe. This tribe is divided into clans as follows: The people of GINADA and BOGABOGA are the INOBUANA, and among these occur the following septa:—BOGABOGA is AWANAWI, and GINADA is WAI-IRAPIA, whilst at MUKAWA are the TAIGI.

In former days the ARI were distinguished by their wearing their hair in ringlets, as do the MAISENA, further north, and the natives of the old KUMUSI (now Northern Division) commonly known as ORAKAIVAS. They also had their distinguishing ornaments; at the present day the majority of these people wear their hair in what is known as "policeman fashion," and many of their ornamental customs are dying.

The women, who cut their hair short, have tattoo marks denoting their tribe, and the wives of chiefs have lines tattooed across the forehead, in the shape of chevrons, with the V pointing to the bridge of the nose, and a straight line down the centre following the shape of the nose. The wives of lesser people had straight lines across the forehead, not chevrons. There was, and is, no tribal tattoo mark for the men. The big sea-hawk known as the MANUBADA is the tribal totem for the whole of the ARI tribe, and there is another equally possessed by the whole tribe, the black crow known as the KISAKISA. In the old days every family had its totem; the fish known to us as "Long Tom" was one instance, but this is rapidly dying out. If a man were to kill the MANUBADA, he would lose all his skill as a fighting man and be unable to throw his spear accurately; if a man ate him he would develop very bad sores. This does not apply to women, who could kill and eat the MANUBADA, but if they did no man could ever eat from the same dish as the woman again.

They say that MANUBADA came to them from Goodenough Island, where the island people wanted to kill him, and that he is the father of the ARI tribe.

2. Regarding the origin of man, information from the present generation has got into such a state of hopeless tangle through Mission teaching and old belief that it is impossible to get the younger generation to tell one anything connected. The following story of the origin of chiefs and common people comes from a very old man:—

"There was first of all an old man and his wife, they had two sons named MARAMARA and TORUGU, these sons were well brought up, and soon after the mother died the old man died too; now were the sons afraid to bury him, as they had seen him do their mother, for they feared to be alone. At last, however, the old man began to stink, then the sons took counsel and decided they must bury him, therefore they took up the body, TORUGU by the feet and MARAMARA by the head, and started to carry him to bury him. Now the old man smelt very much, and TORUGU who was first did not get so much stink as MARAMARA who came behind, nevertheless he kept making rude noises and complaining, though MARAMARA suffered the discomfort in silence; at length the latter addressed his brother as follows:—

" 'It is wrong thus to complain of the smell of our father, he was our father.'

"At length they arrived at the burial ground, and TORUGU wished to hurry the business and get it finished, but the other brother told him, 'Nay, he is our father, treat him with respect.' The old man was buried and they returned home, and then TORUGU became wasteful and cared not for his

garden, whilst MARAMARA made a good garden and was a careful man all his life. Later, when wives were provided (history does not relate how) MARAMARA was therefore a rich man and prospered, and his father's spirit looked well after him, but TOBUGU was poor and did not prosper; now all MARAMARA's sons are chiefs, and all TOBUGU's sons and their sons are poor and common people."

History does not relate, and I cannot find out, where the old man and woman came from, or where the sons' wives came from.

3. Some years ago there was a split in the ARI tribe, due to jealousy on the part of certain clan chiefs, and there is now a colony of them at WAI U ION in the KUBIRI district, of which the chief is IAKWESI, the present village constable, and another colony of them at VARAWARA in DOGURA Bay, of whom the chief is TENAI IAWO; the subclan of KAPIKAPI also split, and a branch of them live at PUTORUTO under chief SIGIMATA.

The head chief for war, for the whole ARI tribe, including these colonies, is KAKAMARA, the present village constable of BOGABOGA, and his influence is paramount wherever ARI people are, from Collingwood Bay to Goodenough Bay.

KAKAMARA is the "big name" of the ARI people; only the ruling chief is allowed to be so called, and it descends with the chieftainship. Much in the same way as the old Scottish "The Macintosh of Macintosh."

SEXUAL MORALITY AND MARRIAGE.

Girls are quite free sexually before marriage, and promiscuous intercourse between young people is the rule. The girls do the asking, and they will ask a boy to sleep with them, and he will come to their parents' or brothers' house to have connection. If a boy goes to a girl who has not asked him, he may have his way or may not, but in either case the girl will shun that boy afterwards and will also tell her friends he is no good.

After marriage the girl is the sole property of the husband, and loose conduct must cease; unfaithfulness had one punishment—death, though the wife was often let off with being speared sufficiently to allow blood to flow; as a rule, the injured husband would summon all his clan to assist him to punish the adulterer, and this led to the constant tribal and clan fights, and also to the above-mentioned splits in the clans themselves.

In the case of visiting friends, however, it is still the general custom to "lend" wives to the guest for the night, and in this the wife has no say whatever, whether she likes the man or not.

The people say they appreciate the Government regulations regarding punishment for adultery, but that is hardly true, I think, as they do not consider gaol sufficient.

A man may not have connection with sister, half-sister, aunt, and first cousin, and it is considered hardly correct in the case of second cousins, though this is winked at. (Compare GWENIGWEDI where first cousins marry.) The only reason given for this is "shame," and that it is "dirty," and the children would have bad skins.

The majority marry within the tribe, mostly from a different clan, but there are many outside marriages. The woman from another tribe is adopted into the clan and tribe of her husband, even when his and hers are at war. A man may have as many wives as he likes, but polygamy is mainly confined to chiefs. This is a matter of being able to pay, rather than anything else. Polyandry is unknown. (Compare GWEDIGWEDI again, where marriage is practically confined to the tribe, and even to the clan, reasons given being that women will not work well on strange land, and difficulties of inheritance.) Marriages are arranged by the parents, when the children

are very young. After the two families have settled this, the children, even if still in arms, are what is called in Motuan MAHENIA, and locally as BOREIA, which means, roughly, engaged, and they are spoken of, even as infants, as husband and wife. However, when the children grow up they are not compelled to ratify this, and may split and marry elsewhere. When the marriage is to be ratified, the boy takes the girl to his father's house and sleeps with her, without touching her. In the morning the girl's mother takes her away, only to return later with a large bundle of firewood. The girl sits on this firewood. Then the nearest male relative expounds to the assembled village what a good worker and weeder she is, and argues about the payment. After he has talked himself dry, the father of the boy takes his turn and runs her down all he can, and this goes on whilst the articles of payment (all agreed upon before by the way) are produced, one by one, and are disparaged on the one side, and praised on the other.

At last the girl's relations admit they are satisfied, and leave. Then the mother takes her to her new home, and lectures her on her duties till nightfall, when she leaves and it is all over. There is no dance or other ceremony.

No sexual intercourse is permitted the bride and groom till they have planted two gardens, and fattened up a pig and sold it (that is to say, for one year after marriage). The payment takes the form of pigs, armshells, etc., and the value of a wife is about five pounds. If a man touches his wife before the year is up, he is jeered at and mocked for being unable to restrain himself. (Compare GWEDIGWEDI, where boy takes girl away into bush for two nights, before bringing to father's house, and where girl is taken to father's house at end of first year of marriage also untouched. When a feast is given the girl has connection with a man not her husband and is then free to the husband.)

The woman has invariably been deflowered before marriage, and in fact they prefer such a woman to a virgin.

Men abstain from cohabitation when : (a) A hunt has been ordered ; (b) when fishing ; (c) when making fishing and hunting implements, canoes, etc. ; (d) during menstruation ; (e) from time wife is enceinte to weaning (two years) ; (f) when he has killed anyone (for a month afterwards) ; (g) when eating, or about to eat, betel nut (otherwise his mouth will rot).

Permanent exchange of wives is carried on, and the women have no say in the matter. They are "thrown away" for bad temper, bad work, and continued unfaithfulness ; a man whose wife is unfaithful is said to know it, as he swells in the belly and penis.

A widow returns to her father and generally marries again. In this case the brother of the dead husband, or nearest relative, arranges wedding and receives payment, but the widow's people have no voice. If a widow marries too soon, the dead man's relatives will pull down her house and destroy her garden. No such thing as marriage, or dedication, to trees, etc., is practised.

CHILDREN.

On the whole, they are not desirous to have children, though this is due mainly to the women, who dislike the pains of childbirth and the attendant troubles of nursing. Boys are much preferred, and girls are looked on only as a necessary evil. Abortion is largely practised, mainly without the consent of the husband. The usual method is to take a drug made from the roots of the KAIPOKI tree, and the leaves of a common vine, which are cooked with coconut and eaten. (Compare description given for Northern Division.) Another method is to make a stone red hot, squeeze the juice from the above on to the stone, whilst squatting over the resultant steam. (Compare fire method in Northern Division.)

When the woman is far gone, abortion is brought about by massage. A childless woman is called *KAIPOKI*, after the tree, and is thought no less of on that account. Infanticide is common with women who already have children, to enable them to suckle young pigs. (Compare *GWEDIGWEDI*, where children are looked for with pleasure and infanticide is unknown. They look with horror on coast custom of burying child with mother if she dies before it is weaned. However, here a man having a daughter will deny her, saying "someone had my wife"; of a son, however, he will be proud.)

They consider that in order to have healthy children plenty of good food is needed; they have no other idea of obtaining them save by copulation, and do not believe a virgin can have a child under any circumstances.

As soon as a woman shows signs of being enceinte (i.e. her teats go black), the husband removes to the club-house. She is then dieted, and is not allowed oysters and clams, and certain kinds of bananas and fish. After the fifth or sixth month all work ceases, and she remains secluded in her husband's house, looked after by her two mothers. A drink made of the leaves of bread fruit and the *SIOBA* tree is given to ease pains. After the birth she is compelled to wash daily in hot water for a week, and then is no longer secluded.

BIRTH CUSTOMS.

There is no ceremony at birth; the husband goes, however, to his garden, and makes a festoon of banana leaves which announces that he has a child.

The after-birth is made into a parcel and hoisted to the top of a tree, where it is left to rot; they say if it is buried the child will grow up weak and ailing. (Compare Goodenough, where the after-birth is mixed with food and eaten, to ensure strong children in the future.)

When the woman is no longer secluded the husband returns home, but he is not allowed to handle the child till it is big enough to be carried easily without danger on the hip.

The grandfather on the maternal side always chooses the name, which is always that of a relation or friend, and all men bear the father's name too. (Compare *GWEDIGWEDI*, where mother chooses name, which is after some event or thing; for instance, local constable *IRE-ARURUA* gets the name *IRE* from being prematurely born in a sugar-cane patch, *IRE* being *GWEDIGWEDI* for sugar cane, whilst *ARURUA* is his family name. Also compare *GWEDIGWEDI*, enceinte woman secluded in special house in the bush till after the birth.)

There is no ceremony akin to baptism, and no godfathers save the grandfather aforesaid, and the maternal uncle, who is considered the child's nearest relative and guardian. When the baby's hair is to be cut for first time, the parents give large presents of food to above two people, and when it is done the hair is buried by the mother at the foot of a banana tree in the garden, and the fruit of that tree belongs to those two.

On coming out of seclusion the mother takes ashes from her fire, and places them on all cross-roads from her village. This is to stop the baby when it grows up from losing its way, and to give it the "bump of locality."

RELATIONS, ETC.

Before children come to puberty no clothes are worn at all. When a boy is getting near puberty families meet and arrange—another family have a girl coming on, and they are approached and arrangement made for a combined feast. The maternal uncles decorate the children and they are given their dance ornaments, and a dance is then arranged. The boy is told during the dance to take the girl

and have connection with her; the dance lasts all night, and whilst the people dance outside the boy "has" the girl in his parents' house. In the morning the boy is given his man's *KAPASILI* and the girl her *rami*. Their noses are slit for ornaments, and ear piercing made; the boy's hair is then allowed to grow, and both sexes wear for the first time the leggings and arm-bands of plaited material. This connection has no effect on future marriage, and has nothing to do with it—it is merely initiation. The dance may last several days, and advantage is taken of it to initiate all children who can be. However long the dance lasts the two children only copulate once. This is called *IARATA*, and all boys initiated are called *IARATA*. Circumcision is not practised.

Menstruation is explained by saying that the moon has monthly connection with all women, and small girls are held up to the moon, and told that the moon will have them first and afterwards their husbands. It is called *SINTWIGAURU*, and the woman is secluded except for daily bath in sea. Police will not touch a woman in the state, even to arrest, unless an officer is there.

No man will speak first to his father-in-law or mother-in-law, though if addressed he will answer. He will not walk straight up to them, and will not stand immediately in front of them. The same marks of respect are shown to chiefs, and if a man meets one while carrying his spear on his shoulder, he will lower it to the "trail"; if they meet on the road he will sit down till the other has passed and will then rise. Their description is "all the same your police salute you."

A foster-mother is regarded as a blood relation. Twins are accounted for as follows: If a woman has given the cold shoulder to a man who wants her, either before or after marriage, he wants revenge; he takes a snip from the string of her *rami*, makes it in a parcel, folding it V-shape; taking a small stick, he buries the two objects deep in the ground. This will have the effect of causing her to suffer heavy labour, and she cannot be delivered till the stick is unburied; she will also probably have twins. The father of twins always wants to find the man who did this, as they believe it the only way twins are caused; they are not thought abnormal in any way, only some one's revenge.

Children have the totem of both father and mother, but for war they rank with the father's tribe if the two should be at war. If the mother's tribe is fighting a third, they will fight for hers. They inherit from both and are used as ambassadors between the tribe where others could not go.

Adoption is practised, the adopted child being a full member of the father's tribe. Adoption is usually by a man who has no heir, and no one to take on his name. He asks another with several children to give him one, and this one is really bought and becomes the legal son of his new father. The list of persons he cannot marry correspondingly increases. He cannot marry any of adopted relations in same degrees as real ones.

RELATIONSHIP TERMS.

Father, *TAMAKU*. Mother, *SINAKU*. Brother, *TUWUKU*. Eldest brother, *TUWUKU IARAKONA*. Middle brother, *TUWUKU TABUSANA*. Youngest brother, *TUWUKU MURUMURINA*. Sister, *NOBUKU*. Husband, *KOWAKU*. Wife, *KOWAKU*. Grandfather, *WAWAKU* (used for all grandrelations with name added). Uncle paternal, *TAMAKU*. Uncle maternal, *ABUKU*. Aunt, *SINAKU*. Uncles and aunts by marriage, *AU UKABARA* (with name). Consins, *TUWAKU*, with name. Father-in-law, *RAWAKU* (applies to all in-laws on both sides when spoken by son-in-law). Husband's brother, *MABUEKU*, when wife speaks. Husband's sister, *IRAKU*. There is no difference in terms used according to sex of speaker, or when speaking direct to, or indirectly of, these relations. The word for relations as a whole is *TUTUNUKU*.

Who are the Melanesians?

By A. M. HOCART.

THERE used to be much confusion in the use of the word Aryan or Indo-European. It was applied both to a group of languages and to a group of peoples who spoke those languages. We now know that the two things are not at all the same, that different races may speak the same tongue, and that the same race may speak different tongues. The same confusion, only worse, is still allowed in the word Melanesian. It is used of a family of languages, of the inhabitants of a group of islands known as Melanesia, and of a certain type of men found chiefly in those islands. The three uses are quite inconsistent, and do not lead to clear thinking. Melanesian is spoken by races that differ much in type from one another. On the other hand, types, very similar to others that speak Melanesian, speak languages that are not Melanesian, for instance, the Vella-Lavellans in the Solomons.

This double use of the word has caused many to identify the original speakers of Melanesian with the physical type, which is usually known as Melanesian. This may not be stated in so many words, but it seems to be tacitly assumed. Now it is highly improbable, one might say impossible, that the original speakers of Melanesian were a dark fuzzy-haired people. There are other languages which are descended from the same original as Melanesian, namely, Polynesian, Malay, Malagasy. The people who use these languages are nearly all light in colour, straight-haired, and somewhat Mongoloid, very unlike the Melanesian type. Where they are alike, crossing is probable. Either, therefore, the Melanesian type borrowed its speech from the Malayo-Polynesian or *vice versa*. The map most decidedly lends support to the first view. Then there is the fact that both Malays and Polynesians were great navigators, whereas the dark people were not; even the Fijian among them were but timid sailors. Thirdly, Malays and Polynesians are immeasurably more civilized than the dark people. Against this it may be argued that Melanesian is more archaic. It is so undoubtedly in some respects—for instance, in sounds—but that proves nothing.

The French Canadians, though much mixed with Red Indians, are more old-fashioned in their speech than the French. Spanish, I understand, is nearer to Latin than is Italian. The conclusion is that the original Melanesians, those who taught their tongue to the dark type now called Melanesian, were a light-coloured straight-haired people. It is much to be desired, therefore, that anthropologists should cease to speak of a dark, fuzzy-haired type as Melanesian, or trace a Melanesian immigration where they find a dark, long-headed strain among Polynesians. Perhaps, indeed, they are right in tracing Melanesian influence where there is a dark strain, but not in the way they think. I have shown that in Fiji a dark people moving eastward drove out a Polynesian-speaking people, possibly also speakers of Melanesian. I have suggested that the same movement has occurred all through Melanesia. The Melanesians, true Melanesians, thus turned out, have sailed east in quest of new homes, but not before they had been much permeated with black blood. It is as though the South American Spaniards were driven out by the Botocudos, Patagonians, and what not, and fled to Spain, bringing a great deal of Red Indian blood with them. That would explain how a dark strain is found in Polynesia, which otherwise is a puzzle, since the so-called Melanesians are but coasters. That, however, is only a suggestion.

Notes on Canadian Shetlanders.

Supplied by J. A. TEIT. Arranged by F. G. PARSONS, F.R.C.S.

THE Institute is indebted to Mr. Teit for records, more or less complete, of 100 Shetlanders, 90 of whom are adult males. I have rejected all those whose ancestry was not pure, and the fact that they happened to have emigrated to Canada cannot, I think, even to the most enthusiastic minds, suggest that their physical characteristics have undergone any appreciable change in their new home.

In the following paper Mr. Teit has furnished the actual details, while I am responsible for all generalizations and suggestions. As observations on the physical characters of Shetlanders are scanty, Mr. Teit's records are a welcome addition to our knowledge.

Records of 90 adult males are furnished, the chief physical characteristics of whom are tabulated below. The number is, of course, small, but I think that it is highly important to record and tabulate these small series so that, from time to time, they may be included in a general survey, such as I attempted for the colour index of the British Isles (*Journ. Roy. Anthrop. Inst.*, vol. 1, 1920, p. 157) and for the cephalic index (*Man*, February, 1922).

On digesting this table of the males, we note that the age of these Shetlanders ranges from 22 to 69; that they were all, with one exception, born in the Shetlands, and were all of pure Shetland parentage, excepting Mr. Teit, the observer (No. 1), who had some Highland blood on his mother's side. There is every reason, therefore, to believe that this series, though small, is exceptionally pure compared with the material with which we usually have to work.

On examining the head measurements, of which only 32 are recorded, the average length of 196 mm. and breadth of 154.7 mm. shows that the size of their heads was above the average for the British Isles, though unfortunately no record is available of the cephalic height. The head size of 350.7 mm., roughly estimated by adding the length to the breadth, too, must be considered in relation to the average stature which, in 90 records, is 1738 mm., or 5 feet 8½ inches.

In my paper in *Man* (see above) the list shows that it is quite exceptional for the sum of the length and breadth to reach 350, and those groups in which this is the case are usually composed of picked individuals with tastes for learning or research. For instance, 150 patients in a London hospital gave an average sum of 343, 80 Bristol hospital patients one of 344.7, while University College Staff was 350, King's College Staff 350, the British Association 353, and a congress of British Anatomists 354.

I have only been able to find one other record of Shetland craniometry, and that a series of only five skulls, by Turner (*Tr. R. Soc. Edin.*, vol. xl, p. 3). In these five the average sum of the length and breadth was 351, so that our two authorities confirm one another in this respect, and we are probably on the right track.

The average cephalic index works out at 790, and the graph (Fig. 1) shows that the distribution of indices on each side of this mean is very symmetrical. It also shows that the range of variation is from 74 to 85. For comparison with other graphs, it is necessary to reduce the actual numbers to percentages, and to construct a graph with these as in Fig. 2. Here we see at once that we are dealing with too small a number to give a reliable chart, since, whenever one is constructed of sufficient records to be reliable, the apex is always close to 15 per cent., instead of nearly reaching 30 per cent., as it does in this case.

My experience with charts of cephalic indices makes me believe that a series of, say, 100 observations on Shetlanders, assuming that the observers are competent, will not affect the average index very much, though it will almost certainly reduce the height of the apex and flatten out the pinnacles on each side of it. It is a surprise

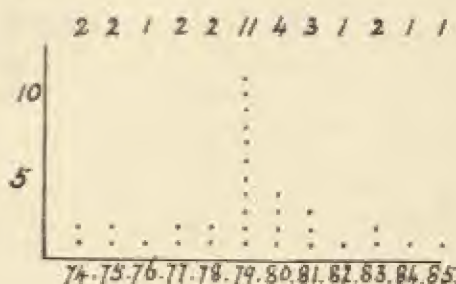


FIG. 1.—CHART OF CEPHALIC INDICES.

to find that the index is as high as 79, and, if it is confirmed, suggests that the Shetlanders cannot be of pure Nordic stock.

Turner does not confirm it, for his five skulls gave a cephalic index of 771, so that any craniologist visiting the Shetlands will find a useful field for research awaiting him.

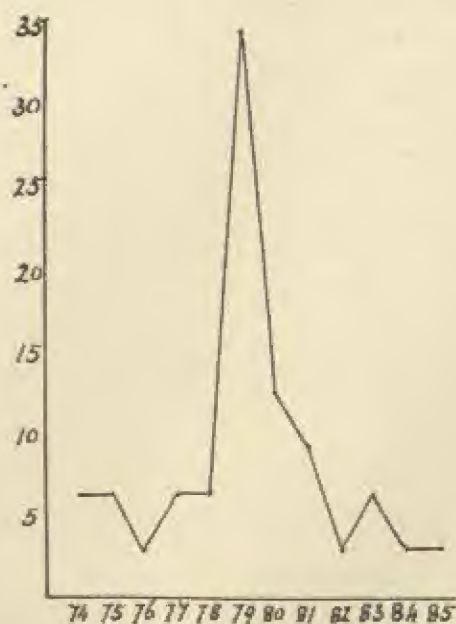


FIG. 2.—CEPHALIC INDICES REDUCED TO PERCENTAGES.

The hair coloration of 90 observations is very light, and gives an index of 25.5. If the chart which I constructed in my paper on the "Colour Index of the British Isles" (*Journ. Roy. Anthropol. Inst.*, vol. 1, pp. 170-171) be consulted, it will be seen that in only 8 of the 81 records does the hair index drop as low as this, and 1

ADELLE MALE BUETLANDER,

No.	Age.	Head, Length.	Head, Breadth.	Cephalic Index.	Bald.	Eyes.	Stature.	Nose.	Face, H.	Face, Br.	Birthplace, &c.
1	52	190	153	805	Br.-St.	L.	1681	Conv.	128	137	Lerwick and Scotland. (Brother to 20.)
2	33	193	153	793	Br.-St.	L.	1763	Conv.	128	136	Foula. (Brother to 15.)
3	35	192	152	792	F.-St.	L.	1710	Conv.	128	138	Lerwick.
4	37	197	156	792	Br.-St.	Int.	1741	Conv.	126	137	Do.
5	25	188	159	846	F.-Cu.	L.	1766	Conv.	123	140	Do. (Brother to 13.)
6	39	203	153	754	D.-St.	D.	1761	Conv.	127	140	Maven.
7	37	198	161	813	D.-St.	Int.	1735	Conv.	128	144	Dimroosness. } Father and Son.
8	69	194	162	835	D.-St.	D.	1791	Conv.	134	154	Do.
9	40	189	155	829	D.-St.	Int.	1583	St.	117	137	Lerwick.
10	38	192	153	797	F.-St.	L.	1751	St.	129	139	Do.
11	60	195	153	785	F.-Wa.	L.	1798	St.	135	145	Dimroosness.
12	40	201	155	771	Br.-St.	L.	1672	St.	123	144	Maven.
13	34	195	154	790	Br.-Wa.	L.	1829	St.	119	138	Lerwick. (Brother to 5.)
14	50	194	155	799	F.-Wa.	L.	1638	Conv.	129	142	Fingwal. (Brother to 25.)
15	29	192	153	797	F.-Wa.	L.	1691	St.	121	139	Lerwick. (Brother to 2.)
16	36	194	153	789	Br.-St.	L.	1742	St.	134	143	Do. (Brother to 28.)
17	57	200	152	760	Br.-St.	L.	1760	St.	128	144	Skadlaw.
18	37	192	155	813	Br.-St.	L.	1902	St.	123	144	Trouda } Brothers.
19	39	196	155	791	Br.-St.	L.	1775	St.	123	144	Do.
20	44	194	152	784	Br.-St.	L.	1661	Conv.	119	132	Lerwick. (Brother to 1.)
21	57	207	153	739	Br.-Wa.	Int.	1790	Conv.	128	138	Do.
22	50	189	150	794	F.-St.	L.	1630	Conv.	118	133	Do. (Brother to 1 and 20.)
23	50	195	153	785	Br.-St.	L.	1734	Conv.	125	135	Maven.
24	34	197	164	832	F.-Wa.	L.	1808	St.	124	148	Do.
25	45	200	153	765	F.-Wa.	L.	1701	St.	124	137	Lerwick. (Brother to 14.)
26	45	203	159	783	Br.-St.	L.	1765	St.	129	150	Burra.
27	35	193	152	788	F.-Wa.	L.	1768	St.	122	143	Whiteness.
28	58	211	156	739	D.-Wa.	D.	1757	St.	120	147	Konningsbury.
29	37	190	158	832	D.-Wa.	Int.	1727	Conv.	124	148	Nesting.
30	38	201	158	786	D.-Wa.	D.	1807	St.	128	149	Burra.
31	42	202	152	752	F.-St.	L.	1863	Conv.	139	145	Maven.
32	52	195	155	795	Br.-St.	L.	1761	Conv.	131	145	Sandaling.
33	50	—	—	—	F.-St.	L.	1745	—	—	—	Gudberwick.

ADULT MALE SHETLANDERS—continued.

No.	Age.	Head, Length.	Head, Breadth.	Cephalic Index.	Hair.	Eyes.	Stature.	Nose.	Face, H.	Face, Br.	Birthplace, etc.
34	26	—	—	—	F. St.	L.	1702	—	—	—	Dunrossness.
35	50	—	—	—	D. St.	Int.	1700	—	—	—	Sandwick.
36	35	—	—	—	F. St.	L.	1705	—	—	—	Lerwick.
37	25	—	—	—	F. St.	L.	1777	—	—	—	Maven.
38	21	—	—	—	F. St.	L.	1736	—	—	—	Sandwick.
39	33	—	—	—	D. St.	Int.	1692	—	—	—	Sandsting.
40	26	—	—	—	D. St.	D.	1739	—	—	—	Dabbing.
41	45	—	—	—	F. Wa.	L.	1708	—	—	—	Dunrossness.
42	50	—	—	—	Br. St.	L.	1938	—	—	—	Do.
43	30	—	—	—	F.	L.	1782	—	—	—	Neating.
44	37	—	—	—	D.	D.	1844	—	—	—	Yell.
45	65	—	—	—	F.	L.	1687	—	—	—	Tingval.
46	35	—	—	—	F.	L.	1700	—	—	—	Lanmashing.
47	00	—	—	—	Br.	L.	1756	—	—	—	Lerwick.
48	30	—	—	—	F.	L.	1773	—	—	—	Dalting.
49	40	—	—	—	F.	L.	1765	—	—	—	Borra.
50	55	—	—	—	Br.	L.	1768	—	—	—	Wana.
51	38	—	—	—	Br.	L.	1798	—	—	—	Do.
52	50	—	—	—	D.	Int.	1695	—	—	—	Eithsting.
53	30	—	—	—	Br. (R.)	D.	1686	—	—	—	Uuel.
54	32	—	—	—	Br.	L.	1747	—	—	—	Whabey.
55	25	—	—	—	F.	Int.	1790	—	—	—	Kommingsbury.
56	28	—	—	—	Br. (R.)	D.	1776	—	—	—	Uuel.
57	35	—	—	—	Br. (R.)	L.	1716	—	—	—	Sandack.
58	40	—	—	—	F.	L.	1678	—	—	—	Do.
59	00	—	—	—	Br.	Int.	1685	—	—	—	Do. } Brothers.
60	45	—	—	—	Br.	D.	1695	—	—	—	Do. }
61	22	—	—	—	Br.	L.	1800	—	—	—	Do. }
62	25	—	—	—	Br. (R.)	L.	1816	—	—	—	Do. }
63	27	—	—	—	D.	D.	1730	—	—	—	Do. } Brothers.
64	40	—	—	—	F. (R.)	L.	1790	—	—	—	Do. }
65	50	—	—	—	D.	D.	1730	—	—	—	Do. }
66	38	—	—	—	D.	D.	1718	—	—	—	Do. }

50	Do.	1760	Skallawa.
40	Yell.	1733	Do.
68	Do.	1732	Yell.
69	Do.	1728	Lerwick
38	Do.	1785	Dunrobin
45	Do.	1785	Do.
71	Do.	1734	Do.
70	Do.	1667	Do.
72	Do.	1735	Do.
30	Do.	1825	Do.
73	Do.	1758	Do.
30	Do.	1733	Do.
74	Do.	1826	Do.
75	Do.	1810	Do.
40	Do.	1770	Do.
76	Do.	1740	Do.
33	Do.	1708	Do.
77	Do.	1783	Do.
36	Do.	1720	Do.
78	Do.	1733	Do.
60	Do.	1660	Do.
70	Do.	1673	Do.
30	Do.	1766	Do.
80	Do.	1698	Do.
80	Do.	1688	Do.
90	Do.		Do.

Hair Index.

The distribution of the hair colour is as follows :—

Fair	..	..	35	..	38.9	per cent.
Red	..	..	4	..	4.4	..
Brown	..	..	28	..	31.1	..
Dark	..	..	23	..	25.5	..
Black	..	..	0	..	0	
			—		—	
			90		99.9	..

The hair index, therefore, is 25.5.

Eye Index.

Light	..	..	61	66.5 = 73.9 per cent.	
Intermediate	..	..	11		
Dark	..	..	18	23.5 = 26.1	..
			—	—	—
			90	90.0	100.0 ..

The eye index is the percentage of dark eyes, viz. 26.1.

Colour Index.

The colour index is—

$$\frac{\text{Hair I.} + \text{Eye I.}}{2} = \frac{25.5 + 26.1}{2} = 25.8.$$

ADULT FEMALE SHETLANDIES.

No.	Age.	Head, Length.	Head, Breadth.	Cephalic Index.	Hair.	Eyes.	Stature.	Nose.	Face, H.	Face, Br.	Birthplace, etc.
1	30	191	146	—	Br.-St.	L.	1620	Comp.	118	136	Yell. (Mother.)
2	20	183	145	—	F.-Wa.	L.	1527	Str.	113	130	B. Columbia. (Daughter.)
3	43	186	144	—	Br.-St.	Int.	1543	Comp.	103	127	Lerwick.

MALE SHETLAND CHILDREN.

1	15	185	143	—	Br.-Wa.	L.	1483	Comp.	108	120	B. Columbia
2	12	195	141	—	F.-St.	L.	1497	Comp. Conv.	120	120	Do.
3	6	185	141	—	F.-St.	L.	1146	St.	98	113	Do.
4	2	165	134	—	F.-St.	L.	875	St.	90	112	Do.
5	14	185	145	—	F.-St.	L.	1405	St.	115	124	Lerwick
6	9	183	149	—	F.-St.	L.	1293	Comp.	111	128	Do.

FEMALE SHETLAND CHILD.

1	14	189	138	—	Br.-St.	L.	1010	Comp.	112	126	B. Columbia.—Daughter of No. 1 ♂ and No. 1 ♀.

NORWAY.

No.	Age.	G. Max. L.	Max. Br.	Ceph. Ind.	Hair.	Eyes.	Stature.	Nose.	Fa. H.	Biacygl. W.	Fa. Index.	District where Parents were Born.
1 (1)	32	190	153	—	F. St. R.	L.	1700	Conv.	119	133	—	Hardanger.
2 (2)	50	193	153	—	Br. St.	L.	1680	Conv.	125	139	—	Stavanger.
3 (3)	35	196	164	—	F.	L.	1755	Conv.	122	146	—	Christiana and Trondhjem.
4 (5)	54	197	150	—	Br. St.	L.	1808	Conv.	132	144	—	Bergen.
5 (6)	30	191	153	—	Br. St.	L.	1691	Str.	126	138	—	Christiana.
		194.6	155.8	800			1729		124.8	140.4	88.8	

SWEDEN.

1 (4)	32	197	162	—	F. St.	L.	1808	Conv.	138	150	—	Hornsund.
2 (7)	34	190	150	—	F. St.	L.	1761	Str.	126	137	—	Stockholm and N. Sweden.
		193.5	150	800			1814.5		132	143.5	920	

DENMARK.

1 (8)	49	195	159	815	R. Wa.	L.	1692	Str.	125	142	880	Mainland, near the Skaw.
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GERMANY.

1 (9)	28	191	155	—	Br. Str.	L.	1724	Str.	126	130	—	Saxony.
2 (11)	18	182	158	—	F. Wa.	L.	1743	Str.	129	138	—	Bohemia, near German border.
		186.5	156.5	830			1733		127.5	137	960	

FRANCE.

1 (10)	36	190	145	763	D. St.	Int.	1685	Conv.	119	135	884	Haute Savoie.
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have every reason to believe that when a round-headed race comes in contact with the long-headed Nordics the head shape is modified long before the colour index. This, at all events, is what a study of German physical anthropology teaches us.

It is especially interesting to notice that, among the 90 records, there is not a single Shetlander with black hair.

There are four red-haired people, but with only 90 in the series; it is impossible to lay any stress on the percentage. Moreover, Mr. Teit records that in five other individuals there was a distinct reddish tinge in the facial hair, though the hair of the head hardly showed it. The fact that the hair of the face is so often redder than that of the head must be borne in mind by physical anthropologists and allowed for.

With regard to the character of the hair, in 29 (69.5 per cent.) it was straight, in 12 (28.6 per cent.) wavy, and in 1 (2.3 per cent.) curly. 90 records of the eye colour give a fairly low index of 26.1; 61 of the 90 had light eyes, 18 had dark, while in 11 the colour was intermediate. A glance at the chart already quoted will show how closely the eye and hair indices correspond in those parts of the British Isles where the Nordic stock is most pure, and how rapidly the eye colour runs up whenever the Mediterranean influence begins to assert itself, though, of course, there are no grounds for suspecting a Mediterranean element in the present series, but only an Alpine one, the original coloration of which is doubtful. It is interesting, too, to notice how different these Shetlanders' coloration is to that of the Scottish highlanders, taken as a whole.

The curvature of the nose is recorded as an indication of the aquilinity of the features, which is a characteristic of the Nordic race. In 15 of the 32 records (46.1 per cent.) it was convex, in 16 (50 per cent.) straight, and in 1 (3.1 per cent.) concave. This nose record is probably a valuable one, though at present we have not enough data to understand its full significance properly or what percentage of convex noses may be looked for in a fairly pure Nordic stock. I remember being greatly struck by the straightness of the noses of most of the German prisoners of war, and especially by their width across the bridge. Mr. Peake, too, has noticed the latter, and regards it as a Mongoloid trait.

The facial length and breadth are given as an indication of race, but the measurement of length requires great care in taking, and a good deal of allowance should be made for the personal equation of the observer. In these 32 Shetlanders the facial length was 126 mm. and the breadth 141.7 mm. This gives an index of 898; but I cannot think that this index is a very illuminating one, because the length and breadth of a face depend on very different factors, and a long face may be masked entirely by the coincidence of other factors which make it also very broad. At the same time, it is obvious that some standard of comparison is necessary, and we cannot be satisfied by merely stating the length because, although the measurement may be in itself small, it may be relatively great if the owner is a man with a very small head. Personally, I think it would be much more valuable to give the length of the face in relation to the combined length and breadth of the head, two measurements which are always taken. It would be better still, no doubt, to give it in relation to the length, breadth and height, but the auricular height is rarely available, since so few craniometrists have an auricular craniometer. Let us see how this suggestion works out for the 32 Shetlanders. That they are large-headed we have seen already; what we want to know is, are their faces really long for large-headed

people? The index I would suggest is $Fa. L. \times 100 = \frac{Cr. L. + Cr. Br.}{2}$, and in

the Shetlanders' case it works out thus :—

$$126 \times 100 \div \frac{196 + 154.7}{2} = \frac{12600}{175.35} = 71.9.$$

This, of course, is valueless until we have something with which to compare it, and the shortest group of faces I can find in my notes is one of 43 Germans from Silesia, whose face length averaged 116 mm., a great contrast to the 126 mm. of the Shetlanders, but one which clearly needs checking with the size of the heads. The Silesian index is $116 \times 100 \div \frac{186 + 157}{2} = \frac{1160}{171.5} = 67.6$. It will be noticed that

the Shetland head size, as represented by $\frac{L+B}{2} = 175.4$, is a little, but not very much, larger than the German, which is 171.5; but the facial length is very much greater, and, I think, is fairly represented by the index of 71.9, against the German 67.6.

I will give two other examples for contrast: one is of 124 British wounded soldiers, whose facial length was 121 mm., giving a face length index of 71.5, and the other of 36 German soldiers from Schleswig-Holstein, with a face length of 118.6, giving an index of 68.1. The face breadths of these four series may be worked out in exactly the same way as the lengths, and, when tabulated for comparison, we get the following results :—

	1.	2.	3.	4.	5.	6.
	Fa. L.	Fa. L. Ind.	Fa. Br.	Fa. B. Ind.	Fa. L. B. Ind.	Ceph. L. + Br. + 2.
Shetlanders ...	126	71.5	141	80.3	889	175.5
British Soldiers ...	121	71.2	135	79.4	896	170.0
Schleswig-Holstein ...	118.6	68.1	140	80.4	847	174.2
Silesians ...	116	67.6	139.8	81.5	829	171.5

It will be seen that Col. 6 gives the standard of comparison or a rough estimate of the head size as far as our data will give it. Col. 1 is the actual length of the face; Col. 2 the face length in terms of the head size; Cols 3 and 4 are the face breadths, treated in the same way; while Col. 5 gives the usual face index.

When Cols. 2 and 4 are studied it is evident that these four groups of people varied much less in their facial breadth than in their facial length, since the highest and lowest indices in the former (Col. 4) are separated by two points only, while in the length index (Col. 2) there are four points of difference. In other words, we establish the fact that the long, narrow Nordic face owes twice as much to its increase in length over the short, broad German face as it does to diminution in breadth; and this, in spite of the fact that the breadth is actually a greater measurement than the length and so liable to a greater range of variation.

I think this fact is an important one to direct attention to and to check with further observations as they come to hand, because the mechanical cause of the increased length or decreased breadth of the Nordic face is occupying a good deal of attention, and it is necessary, in the first place, to be quite clear which is the

more important. We cannot tell this if we are content with merely stating the facial index.

Of course, everything said about the facial index applies equally to the cranial. We ought to be able to state whether a brachycephalic skull is really short, or only appears so, because it is very broad. Hence I should like to see the length given in terms of the breadth plus the height, thus obtaining a more reliable constant, but I feel that this present little paper on Shetlanders is hardly the place to do more than hint at the desirability of some reform of this kind. In conclusion, I should like to call attention to the fact that Mr. Teit includes records of three Shetland females and seven children, as well as of a few foreigners. I have included his tables, as they may be a useful addition to other series later on, but at present their small numbers do not justify any generalizations.

CONCLUSIONS.

The conclusions I have come to from working through these statistics are that these Shetlanders, in every respect except head shape, are very pure examples of the Nordic race. Their coloration index of 25.8 is quite a low one, as anyone interested in this subject will see by comparing it with the list I compiled in my paper on the "Colour Index of the British Isles" (*Journ. Roy. Anthropol. Inst.*, vol. 1, pp. 168, 169).

Out of 81 recorded sets of observations the Shetlanders would be the fourteenth in point of fairness, while there are only 7 other records which do not contain a single black-haired individual, and many of these are founded on considerably fewer than 90 people.

The hair and eye indices are nearly the same (hair, 25.5; eyes, 26.1), a characteristic specially noticeable in those parts of the British Isles where the Saxon element is strongest.

The stature of practically 5 feet 9 inches (1738 mm.) is very high when we remember that these were not picked specimens; it is the height we get in most of our English and Scottish Universities where the records are taken from the well-nourished classes.

The nose was convex in half the cases, pointing to a fairly high aquilinity of features, while the true face length index is rather higher than the British, as far as our small numbers show, but is markedly higher than that of the Germans.

The only record which makes me think that the Shetlanders have an Alpine admixture is their cephalic index of 79 (founded on 32 records). Doubtless Prof. Flinders Petrie would instance this as a case of head shape adapting itself to environment; but, unfortunately for his theory, it is working in the wrong direction, for he postulates a long-headed North and a short-headed South, and here, in the most northerly part of the British Isles, the heads are more brachycephalic than in London, Bristol or Somersetshire.

Those of us who, like myself, believe that head shape is racial and very persistent, will suspect a certain mixture of Mid-European or Alpine blood with the prevailing Nordic element, but we can say definitely that there are no signs of any Mediterranean admixture.

The Origin of the Ba-Hima.

By the Rev. W. A. CHABTREE.

Is it *de rigueur* to accept the hypothesis that the Ba-Hima are of Galla origin, or at least related to the Galla? The idea was started by Speke in the 'sixties of last century, when very little was known about Africa, and has not, so far as I am aware, been called in question since. But is it really the most likely or the most reasonable hypothesis? Some one may have suggested a tradition of migration from the north-east, such as, I believe, Speke wanted to discover; but no reliable native ever alluded to it when I was in the country, and I do not think there is any such tradition. But everybody knows the story of Kintu, and I propose to discuss this story in the light of philology and the present distribution of the people in and around Uganda.

(1) *Distribution*.—The extent of Ba-Ganda influence under the Ba-Hima aristocracy is always associated with the western side of the Lake, never with the eastern side. Eastwards the range of the Ba-Ganda stops short at the border countries of Bu-Soga proper. In that country Ba-Ganda influence was little more than that of visitors coming to exact tribute, often falsely. They did not reside in Bu-Soga, and seldom visited the border districts, where the people are much mixed with neighbouring tribes outside Bu-Soga. The only exception I met with was the case of a young chief called Miro, where a group of Ba-Ganda Mohammedans had installed themselves, Miro himself having adopted the style of a Mu-Ganda chief. They were not numerous, but were destined to play a not unimportant part in local history. They were the first Ba-Ganda to penetrate so far to the east and north-east, and their advent was quite a recent event.

Northwards Ba-Ganda influence ends with the kingdom of Bu-Nyoro, always a rival kingdom with its own king and very special customs. These have been very carefully described by Rev. J. Roseoe. They bear obvious affinity to customs prevailing in Bu-Ganda and all kingdoms west of the Lake, such as Ankole and Ruanda. They have, I believe, comparatively little in common with those of Bu-Soga and probably none with those of Kavirondo or any country beyond Bu-Nyoro on the north and north-east. Moreover, the organization of Bu-Soga and Kavirondo under local chiefs is akin to the patriarchal system, and in Kavirondo radically different from the kingdoms organized by the Ba-Hima aristocracy. Bu-Soga made some attempt to follow this organization, but on such a minor scale that there were no less than five independent chieftains for Bu-Soga proper alone, an area not much larger than a single province of Uganda controlled by one big chief answerable to the king. The Ba-Soga five were virtually answerable to nobody but themselves. In this respect they resembled the Kavirondo chiefs or heads of clans, but differed from them in having a small organization of minor chiefs after the Uganda pattern.

To this general relation the distribution of the Ba-Hima herdsman also corresponds. When I was in Bu-Soga my cowmen were not all pure Ba-Hima. One at least was markedly allied to the Ba-Nyoro and came from the border line between Bu-Nyoro and Bu-Soga. When I stayed for a short time in Kavirondo, at Mumia's, the only cowman I could get was a Masai. He remained with me

when I moved to Bu-Soga, and was not altogether out of harmony with his surroundings there. Just previously I was obliged to go to Bu-Ganda, and there he was completely out of his environment. I suppose he was the first Masai ever to enter Uganda. To sum up, the home of the Ba-Hima herdsman is to the west of the Lake; on the eastern side he does not go much beyond the Nile.

Moreover, on this western side of the Victoria Lake, I was told by a pioneer missionary to Usukuma and the southern shore, Ba-Hima herdsman may be found far to the south, in the Uyamwezi country. It may also be interesting to recall that the comparatively recent dealings of the Ba-Ganda with the coast—they began in the 'fifties—have always been *via* the west and south of the Lake. No Ba-Ganda canoes—really manned by Ba-Sesse islanders who are subject to Uganda—ever went to the east. Even Ba-Soga canoes rarely, if ever, went beyond the Sio Bay ironworkers; and the Ba-Vuma islanders, who are far greater canoe men than the Ba-Soga, and for skill rank with the Ba-Sesse, have told me themselves that their only journey to the eastern shore was to a market where salt was obtained. The eastern shore has no affinities with Ba-Ganda or Ba-Soga, and is looked upon as a foreign and inhospitable country.

If, then, the natural relations of the people to-day are distinctly with the west, why press for any relation with the Galla to the north-east? There is not a shred of evidence to show that the Ba-Ganda, or still less the Ba-Hima, were ever in touch with any of the people who now live on the eastern or north-eastern border, and who would have been the first to be dispossessed by any hypothetical invasion, such as Masai driving the Galla further to the east.

(2) *Language*.—The language question is even more decisive. Being deeply interested in all the people immediately outside Bu-Ganda—Luo, Teso, Kavirondo—as well as the more general question of the Masai and Nandi, I sent for various books, including grammars of Bari and Dinka and a Galla dictionary. I turned over the pages of this Galla book many times. There were unusual words in Ganda. Did they derive from Galla? Did any of the languages derive from Galla? And the response from the dictionary was virtually nil. When I came back to England and Nandi material became a little more accessible (I was never able personally to investigate Nandi), there seemed just a little chance that Nandi might have some slight relation to Galla; and I wrote out a little paper on these lines. But for all the other languages Galla seemed a barren field.

Just possibly the Ba-Lagoor Elgonyi people, on the southern edge of Mount Elgon, derive their name from Galla *laku*, twin. They are a Nandi stock, and communicate with their fellow-kinsmen, the Saveh people on the northern edge, by going over the mountain. They never venture round its base. In this sense they are twin with the Saveh, inhabitants of the same mountain, for Nandi people are essentially hill-folk like the Galla. Possibly both Galla and Nandi are of that sturdy stock of mountaineers to which the Egyptians referred as hill-men, their most formidable opponents.

Only one other Galla word seemed the least bit suggestive, and that was *qab*, have, possess. It bears a striking resemblance to an element *kaba* found in extended form as Ganda *kaba-ka*, a king; and in the two names, *kaba-rega*, the late Mu-Nyoro king and Kavirondo apparently *kaba-rando*. The second element survives in the word Namulondo,¹ one of the border chiefs of Uganda, adjacent to North Bu-Soga, across the Nile.

¹ I might also mention, as an interesting subject for investigation, that *namu-londo* in Ganda also signifies "a throne." Compare for the idea the use in Ashanti of the word "stool" to signify the lawful ruler.

In Bunyoro a king is called *mu-kama*, possibly a variant of this element *kaba*. Further study leads me to think that this possible connection of *kaba* with Galla *gab* is mere coincidence. The primitive idea for king is often "the great one" ($\sqrt{\text{mag}}$ or $\sqrt{\text{gam}}$), but never, I think, "the possessor." If so, our search for allied forms will be on the west, where there are such forms as *Tubu mai*, for *magi*, and *Ful lam-do*, possibly *lam* for *gam*, both indicating "chief." In any case our language connection is quite as strong on the west as with Galla on the north-east.

But the most decisive word is *Ganda ente*, a cow, universally used by all the Ba-Hima stock, instead of Bantu *ngombe*. This peculiar form *te*, a cow, cattle, is actually in use in Logo, Madi, Lugbara, Avukaya, a little group of allied isolated speech between the Zande country and the Albert Lake, with the mixed speech of the Bari adjacent on the north. This element *te* may possibly occur in extended form (*gi-te*: cf. e.g. *met*, a cow, in Masai *en-gideng*, Teso *a-kiteng*, Bari *kiteng*, or be related to Nandi *tang*, a cow, pl. *tic*. It certainly is not Galla; and only in this Logo area has it been reduced to the monosyllable *te*.

If, then, we trace back the Ba-Hima and their cattle to the Logo district, we are getting near to the Zande country, where we find in the present language a fair proportion of words corrupted out of Bantu forms very similar to the Ganda type of Bantu, and where, moreover, on the north still live a people with a very similar name. Sir H. Johnston writes it Ba-Hōma, and claims for the Ba-Hōma the privilege of being the most northerly Bantu tribe of the whole group. They live "in the basin of the Upper Sue River, between Tembura and Wau," and "may have migrated northwards comparatively recently from the Nile Congo water-parting and the sources of the Sue River"—that is, from a position nearly in the centre of the present Zande area. There are also many Zande in the district about Tembura; in fact, they form the most important part of this administrative area of the Bahr-al-Ghazal province in which are situate Tembura and the Ba-Hōma.

Too little yet is known about this people to base any argument on what may after all be a mere coincidence of names. At the same time, it should be noted that all the Ba-Hima¹ speak a pure type of archaic Bantu. This could hardly be the case unless the Ba-Hima had been speaking a Bantu tongue for centuries. Had they come to Uganda with a non-Bantu speech, as has been suggested, it is inconceivable that the present speech could be so pure.

For we have a somewhat parallel case further south, where the vast Luba area has been invaded by the Bushongo civilization, and possibly by other outside elements. In this case we have one fairly pure speech, possibly the original Luba language, and several Luba dialects with strange abnormalities. They have never shaken off the foreign influence; and even the true Luba speech, resembling as it does in many ways the speech of the Ba-Ganda (not the speech of the Ba-Hima with its *h* and *r* sounds) has several peculiarities, notably *f* and *p*, and a different tense arrangement. It has not absolutely divested itself of something slightly differing from the archaic type represented by Ganda. The only obvious foreign element in the speech of the Ba-Hima is the *h* and *r*, which it shares with several other Bantu languages, and which Sir H. Johnston has humorously called the "*h* disease."

Two Ba-Ganda chiefs bear strangely foreign names. One is Gabunga, the chief of the canoes. The Zande word for canoe is *kurungba*, a word which needs explanation. It is longer than the ordinary Zande words as though it were com-

¹ I have generally heard the herdsmen race called Ba-Hima. But some people write it Ba-Huma, a form closely like Ba-Hōma.

pounded; but the vocabularies give no hint as to what its two elements might be. A corresponding word is Zande *kurungbo*, a wooden dish. The word differs from the foreign Ganda one by having *l(r)* for *b*, a change that is exceedingly common, and nasalized *g* instead of nasalized *gb*. Moreover, one wonders if the Zande forms are in any way corrupted out of a fairly common Bantu form *banga*, to work in wood, with a prefix *ku* or *gu*, that which is made of wood (*Prefix System*, § 177). The sense of "hollowed out" is preserved in Ganda *e'bamvu*, a wooden trough, which is a direct derivative of *banga*. On this suggestion, the form Gabunga is nearer the original than the modern Zande *kurungba*.

The other strange name is Pokino, the chief of Budu. The initial "p" is so utterly foreign to Ganda as to arrest attention. Remembering how easily in Africa the vowel *o* in tone passes to *we*, one is at once struck with a resemblance to Zande *buckindo*, a chief. The *nd* for *n* merely helps to lengthen the preceding vowel. In fact *Pokino*, *pokino* and *peekindo* are all possible pronunciations of *buckindo*; most probably *buckindo* is a variant pronunciation of some original form closely like Pokino.

Finally, in one version of the legend of Kintu, the canoes are said to have put in at the landing-place of Podi. This is far more likely to have been some traditional remembrance of actual ancestors than a literal place-name. No usage to-day would justify any prominence being given to a place-name. Canoes put in at convenient places, and often a market is held in the immediate neighbourhood. These markets are known locally, but no one from a distance has much cognizance of them. Even such centres as a salt-market, a pottery-market, or a market for iron-hoes, acquire little prominence outside the local area. If the name is by any chance known at a distance, it is only because the local people have re-sold the goods to their inland neighbours. I think one might say that visitors to the important markets rarely go more than 25 miles even by water, and less by land.

But the initial *p* of the word *podī* is foreign. Galla very rarely employs "p" and never as an initial consonant. In Nandi and Massi *p* would be a weak sound interchangeable with *v*. Initial *p* might, however, occur in the Shilluk-Luo language. But these people never move far away from the water; and as no one has ever suggested any connection with these, the idea may be dismissed at once.

By far the most natural reference in Podi would be to the Fula race of West Africa. In that language to-day *pul-o* is the singular of *ful-be*, the Fula people. Is the resemblance of the Ba-Hima to the Fula race an unthinkable proposition? The idea occurred to Sir F. Lugard long ago; for I find that Lady Lugard writes in her book (*A Tropical Dependency*, p. 380):—

"In connection with the theory of the descent of the Fulani from the Hyksos, I would quote the great similarity observed by my husband to exist between the Wahuma of Eastern Africa and the Fulani of the Western Sudan. The Wahuma, like the Fulani, were pastoral nomads who, in the endeavour to secure fresh grazing-ground, became invaders and conquerors. In Uganda, Unyoro, Karagwe, and other eastern states, the Wahuma founded the royal dynasties, while their tribesmen, corresponding in position to the Cow Fulani, tended the cattle of the negroids. The Wahuma, who have great physical likeness to the Fulani, are often strikingly handsome and extremely intelligent. That the Wahuma should have descended upon East Africa from the valley of the Nile is not surprising."

Perhaps not from the Nile, but from the Zande area in the west, concerning which I have made some attempt to write a special paper. I venture not only to suggest

that this is a far more natural explanation of the origin of the Ba-Hima; but also to submit that a good deal of history as unfolded by the languages and distribution of modern races will confirm this view.

In the Luo legend, Apodho is the ancestor of all mankind. (C. W. Hobley, "Studies in Kavirondo and Nandi," *Journ. Roy. Anthropol. Inst.* (July-December, 1903). In the second genealogy Apodho is the father of Chindu (Kintu). In either case there may be a reference, not to the Fula in particular as a separate nation, but rather to the generic light-skinned race as a whole, whose colour is expressed in N. Africa by \sqrt{pul} , red, reddish, whence Puni (Phœnician), as well as Ful, or Fula, and perhaps also Lub-im (for *bal-im*), Libyan.

Kintu appeals to me as a Bantu corruption of Kit-ti for Hit-ti, the Hittite, not improbably connected in some way with the Hyksos. There are several possible traces of Hittite influence at a very early period in North Africa. If this were so, the original units of the shepherd race might have been organized by Hittite adventurers. So, too, other Hittites might have organized the ancestors of the Luo in much the same way as the modern Fung have done with the Shilluk, who are linguistically one with the Luo. The mention of similar names in the Ganda story and the Luo story seems to point to a great antiquity. The two races have no connection whatever to-day, and most probably never did have. The organizers were of the same stock; but the aboriginal races were separate and developed in separate parts of Africa.

Is it possible that the genius for organizing kingdoms, so remarkable in this Ba-Hima shepherd race, arose from a Hittite element?

Erratum.

Journal, vol. liii, January-June, 1923.

Page 232.—In Fig. 1b of the paper by P. G. H. Boswell and J. Reid Moir, on "The Pleistocene Deposits and their contained Palæolithic Flint Implements at Foxhall Road, Ipswich," the figure of the section was inadvertently omitted, although the legend and key-diagram were inserted. The complete figure will be found in the *Proceedings of the Geologists' Association*, vol. 25, Fig. 11, p. 136.

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NOTE.—The Numbers in ordinary type refer to the pages; the numbers in Clarendon type are the reference numbers of MAN, 1923; where necessary the page references to MAN are added in brackets. Except when otherwise indicated, entries which refer to reviews are shown in italics. For a full list of reviews refer to the CONTENTS of MAN. For collected references, see especially *Archæology*, *Folklore*, *Physical Anthropology*, *Religion and Magic*, *Sociology*, *Technology*.

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- 1921 Burnshaw, Matthias M., Esq., M.R.C.S., M.R.C.P., M.B. (Moscow), *51 Cazenove Road, Stoke Newington, N. 16.*
- 1913 Burrows, Arthur, Esq., M.D., *3 Buckingham Crescent, Victoria Road, Manchester.*
- 1903 Burry, Miss B. Pullen-, *The Forum Club, 6 Grosvenor Place, W. 1. (*)*
- 1906 Bushnell, David I., Esq., Junr., *The University, Virginia, U.S.A. (**¶)*
- 1913 Buxton, L. H. Dudley, Esq., M.A., *Dept. of Human Anatomy, University Museum, Oxford. (**¶§)*
- 1904 Campbell, Harry, Esq., M.D., *33 Cavendish Square, W. 1.*
- 1915 Capen, E. W., Esq., Ph.D., *146 Sargent Street, Hartford, Conn., U.S.A.*
- 1920 Cardinall, A. W., Esq., District Commissioner, *Narrango, Northern Provinces, Northern Territories, Gold Coast; Springfield, The Weald, near Sevenoaks, Kent.*
- 1912 Carline, G. R., Esq., *Pitt Rivers Museum, Oxford.*
- 1922 Caton-Thompson, Miss Gertrude, *76 Albert Hall Mansions, S.W. 7.*
- 1920 Chaikin, George, Esq., *Royal Societies Club, St. James's Street, S.W. 1.*
- 1922 Chauvin, Laurence, Esq., *93 Shooters Hill Road, Blackheath, S.E. 3.*
- 1921 Child, W. A., Esq., *389 Hess Street, South Hamilton, Canada.*
- 1923 Childe, V. Gordon, Esq., *Bloomsbury House Club, Cartwright Gardens, W.C. 1.*
- 1915 Chinnery, E. W. P., Esq., *Kokoda, Meryl Street, Malvern, Melbourne. (¶)*

- Year of
Election.
- 1923 Chisholm, George G., Esq., 12 *Hallhead Road, Edinburgh.*
- 1917 Cholmley, Captain R. S., 4 *King's African Rifles, Bombo, Uganda; Place Newton, Rillington, Yorks.*
- 1874 Church, Sir William Selby, Bart., K.C.B., M.D., D.Sc., Ex-President R.C.P., *Woodside Place, Hatfield, Herts.*
- 1923 Clappé, Montagu B., Esq., LL.B., 6 *Old Jewry, E.C. 2.*
- 1911 Clark, Major J. Cooper, *South College, Elgin, N.B.*
- 1921 Clark, F. Le Gros, Esq.
- 1914 Clark, W. E. Le Gros, Esq., F.R.C.S., *Kuching, Sarawak, Borneo.*
- 1913 Clarke, Louis C. G., Esq., *Berkeley House, Hay Hill, W. (§)*
- 1924 Clay, Richard C. C., Esq., M.R.C.S., L.R.C.P., *Manor House, Fovant, near Salisbury.*
- 1921 Cleve-Vanderkiste, Miss Florence de, 44 *St. Mark's Road, Kensington, W. 10.*
- 1895 Clodd, Edward, Esq., *Strafford House, Aldeburgh, Suffolk.*
- 1923 Cobb, Miss Victoria, 16 *Holland Street, Kensington, W. 8.*
- 1922 Codrington, E. Edward, Esq., *Gunnensbury School, Chiswick, W. 4.*
- 1921 Colquhoun, D., Esq., M.D. (Lond.), 1 *Holland Villa Road, W. 14.*
- 1913 Coltart, Captain A. H., *Heathfield House, Fareham, Hants; Junior United Service Club, Charles Street, S.W. 1.*
- 1907 Colville, Ernest F., Esq., *The Residency, Port Herald, Nyassaland Protectorate; New University Club, S.W.*
- 1921 Cook, Walter, Esq., 103 *Church Road, Upper Norwood, S.E. 19.*
- 1895 Corner, Frank, Esq., M.R.C.S., *Royal Societies Club, St. James's Street, S.W. 1. (§)*
- 1922 Crawford, O. G. S., Esq., B.A., *Ordnance Survey Office, Southampton.*
- 1921 Crawshaw, de Barri, Esq., *Rosefield, Sevenoaks, Kent.*
- 1921 Crequer, Vincent J., Esq., *P.O. Box 40, Nelson, New Zealand.*
- 1913 Cross, Mrs. H.
- 1921 Crossley, Fred H., Esq., 19 *Shavington Avenue, Chester.*
- 1900 Crowfoot, J. W., Esq., M.A., *Khartoum, Sudan.*
- 1911 Cruickshank, J. G., Esq., *Audit Dept., British Guiana.*
- 1911 Czekanowski, Dr. Ian, 8 *Dlugosz Str., Lemberg (Lacou), Poland.*
- 1895 Dalton, Ormonde Maddock, Esq., M.A., F.S.A., Corr. Mem. Soc. d'Anthrop., *Paris, British Museum, Bloomsbury, W.C. (§§)*
- 1922 Daniell, Mrs. Mary, 17 *Oakwood Court, Kensington, W. 14.*
- 1893 Davies, Rev. Prof. T. Witton, B.A. (Lond.), Ph.D. (Leipzig), Th.D., D.D. (Geneva), *Bryn Haul, Bangor, North Wales. (*)*
- 1922 Davies-Shiel, L., Esq., 53 *North Road, Bourne, Lincs.*

Year of
Election.

- 1908 Dawkins, R. M., Esq., M.A., *Plas Dulas, Llanddulas, North Wales.*
- 1869 Dawkins, Sir W. Boyd, M.A., D.Sc., F.R.S., F.S.A., F.G.S., Honorary Professor of Geology and Palæontology in the University of Manchester, *Fallowfield House, Fallowfield, Manchester.* (¶)
- 1922 Dawson, Miss Agnes, M.B.E., 113 *Wallwood Road, Leytonstone.*
- 1922 Deacon, Frederick, Esq., *Steplake, Willow Wood, Romsey, Hampshire.*
- 1920 Dean, Edward, *Upper Lodge, Bushey Park, Hompton Hill, Middlesex.*
- 1912 Derry, Capt. D. E., M.B., Ch.B., R.A.M.C., *The Savage Club, 6 Adelphi Terrace, W.C. ; Turf Club, Cairo.* (¶)
- 1913 Desai, Rao Bahadur Gobindbhai H., *Suba, Baroda, India.*
- 1922 Dick, Major W. F., *Josselyns, Little Horkesley, near Colchester.*
- 1907 Dixon, A. F., Esq., Sc.D., Professor of Anatomy, *Trinity College, Dublin.* (*)
- 1908 Dixon, Dr. Roland B., Professor of Ethnology, *Harvard University, Cambridge, Mass., U.S.A.*
- 1920 Donohugh, Mrs. Agnes C. L., M.A., 31 *West 76th Street, New York City.*
- 1909 Dornan, Rev. S. S., *P.O. Box 106, Bulawayo, Rhodesia ; The Phoenix Hotel, Beaconsfield, S. Africa.* (¶)
- 1915 Driberg, J. H., Esq., c/o *The Postmaster, Khartoum, Sudan ; Uckfield Lodge, Crouchborough, Sussex.*
- 1899 Duckworth, W. L. H., Esq., M.A., M.D., Sc.D., *Jesus College, Cambridge.* (*¶)
- 1921 Dundas, Hon. Chas., *Moshi, Tanganyika Territory, East Africa.*
- 1908 Durham, Miss M. Edith, 36 *Glenloch Road, Hampstead, N.W. 3.*
- 1919 East, C. H., Esq., M.D., *St. Clare, Malvern.*
- 1893 Ebbels, Arthur, Esq., *St. Michaels, Burgh Heath, Epsom.*
- 1921 Edgar, Rev. J. Huston, F.R.G.S., *China Inland Mission, Kwankhsien, West China.*
- 1922 Edgell, Rev. William H., *The Vicarage, Stow Bedon, Attleboro, Norfolk.*
- 1911 Edwards, Francis, Esq., 83A *High Street, Marylebone, W. 1.*
- 1906 Edwards, Brig.-General W. F. S., C.B., C.M.G., D.S.O., *Nairobi, Kenya Colony, East African Protectorate.*
- 1905 Eliot, Sir Charles, K.C.M.G., C.B., M.A., LL.D., *The University, Hong Kong.*
- 1923 Elphinstone, Sir Howard, c/o *Messrs. Grindlay & Co., 54 Parliament Street, S.W. 1.*
- 1909 Entwistle, Peter, Esq., Deputy Curator, *The Free Public Museum, Liverpool.*
- 1891 Evans, Sir Arthur J., M.A., LL.D., Litt.D., F.R.S., F.B.A., F.S.A. ; Professor of Prehistoric Archaeology in the University of Oxford, *Youlbury, Oxford.* (¶)
- 1916 Evans, I. H. N., Esq., B.A., *Perak Museum, Taiping, Federated Malay States.* (¶)
- 1913 Evans, Oswald H., Esq., F.G.S., *Casilla 46, Valparaiso, Chile.*
- 1913 Evans, Major T. J. Carey, I.M.S., c/o *Grindlay, Groom and Co., Bombay, India ; Llysmeddya, Blaenau Ffestiniog, N. Wales.*

Year of
Election.

- 1903 Fallaize, E. N., Esq., B.A., SECRETARY, *Vinchelez, Chase Court Gardens, Enfield.*
- 1900 Farnell, Lewis R., Esq., M.A., Litt.D., Vice-Chancellor of the University of Oxford, *Exeter College, Oxford.*
- 1921 Farquanson, Alexander, Esq., *Isplay House, 65 Belgrave Road, S.W. 1.*
- 1911 Faulds, Henry, Esq., L.F.P.S., *3 James Street, Wolstanton, Stoke-on-Trent.*
- 1921 Favell, Richard Vernon, Esq., M.R.C.S., *Penberth, St. Buryan S.O., Cornwall.*
- 1880 Felkin, Robert William, Esq., M.D., F.R.G.S., *Whare, R.A., Havelock North, New Zealand.*
- 1917 Fell, Rev. J. R., *Native Training Institute, Clixby Estate, Kafue, N. Rhodesia.*
- 1911 Fenton, C., Esq., *9 Queen Victoria Street, E.C. 4.*
- 1913 Fenton, Capt. E. G., F.R.C.S.I., *Ceancora, Corbally, Limerick.*
- 1908 Fenwick, N., Esq., *Seychelles Islands, Indian Ocean.*
- 1922 Fergusson, Capt. V. H., *Scottish Rifles, c/o Postmaster, Khartoum, Sudan.*
- 1914 Ferreira, Dr. Antonio Aurelio da Costa, *Belem, Lisbon, Portugal.*
- 1902 Ferrers, Earl, *35 Victoria Road, Kensington, W. 8.*
- 1921 Field, Henry, Esq., *Baggrave Hall, Leicestershire.*
- 1916 Finlay, Douglas E., Esq., M.B., B.Sc. (London), M.R.C.S., L.R.C.P., *Wells Dene, Gloucester.*
- 1921 Fleming, Miss Rachel Mary, *1 Morine Terrace, Aberystwyth.*
- 1908 Fleure, H. J., Esq., D.Sc., Professor of Geography and Anthropology, University College of Wales, *Hillside, Brynynor Road, Aberystwyth. (¶§)*
- 1920 Foran, Major W. R., *17 Fordhook Avenue, Ealing, W. 5.*
- 1921 Fort, G. Seymour, Esq., *11 Radnor Place, Hyde Park Square, W. 2.*
- 1923 Fox, Cyril, Esq., Ph.D., F.S.A., *Red Gables, Milton, Cambridge.*
- 1919 Fraser, J. S., Esq., M.B., *121 Grove Road, N. 7.*
- 1885 Frazer, Sir James G., D.C.L., LL.D., Litt.D., *Lanfine, Hills Road, Cambridge.*
- 1907 Freire-Marreco, Miss Barbara W. (¶) *See Mrs. B. Aitken.*
- 1910 Fuller, A. W. F., Esq., *7 Sydenham Hill, S.E. 26. (*)*
- 1902 Furness, W. H., Esq., M.A., M.D., *Wallingford, Pa., U.S.A. (*¶)*
- 1901 Gardiner, A. H., Esq., *9 Lansdowne Road, Holland Park, W. 11.*
- 1923 Gardner, George A., Esq., *194 Calle Callao, Buenos Aires, Argentine.*
- 1916 Garfitt, G. A., Esq., *Holmesfield, Sheffield.*
- 1914 Garrad, Barry L., Esq., B.A., *64 Priory Road, W. Hampsstead, N.W. 6.*
- 1913 Garrett, T. H., Esq., *Royal Societies Club, St. James's Street, S.W. ; Royal Aero Club, 3 Clifford Street, W. 1 ; c/o Societate Sospiro, Cazuta Postala 206, Strada Eminescu 5, Ploesti, Roumania.*
- 1922 Garrod, Miss Dorothy A. E., *133 Banbury Road, Oxford.*
- 1881 Garson, John George, Esq., M.D., Foreign Assoc. Anthropol. Soc., Paris ; Corr. Member Anthropol. Soc., Berlin, Moscow, Rome ; *Moorcote, Eversley, Winchfield, Hants. (¶)*

- Year of
Election.
- 1907 Geddes, Rt. Hon. Sir A. Campbell, K.C.B., M.D., Ch.B., British Ambassador
Extraordinary and Plenipotentiary, *Washington*.
- 1922 Gentley, Mrs. Adele M., 61 *Great Cumberland Place*, W. 1.
- 1901 George, E. C. S., Esq., C.I.E., *Ruby Mines, Burmah*.
- 1907 Gibson, A. E. M., Esq., Barrister-at-Law, *Dorunkeh Chambers, Calabar*,
S. Nigeria.
- 1913 Gibson, Sir Herbert, *Bella Vista, Cachari, F.C.S., Buenos Aires*.
- 1921 Giles, P., Esq., D.Litt., *Emmanuel College Lodge, Cambridge*.
- 1901 Gladstone, R. J., Esq., M.D., 22 *Regent's Park Terrace, N.W. 1*. (¶§)
- 1920 Glenconner, Lord, 34 *Queen Anne's Gate, S.W.*
- 1921 Gomersall, E. E., Esq., M.Sc., c/o *Glannant, Poppleton, Yorks*.
- 1922 Gordon, Capt. Douglas Hamilton, D.S.O., 4/11 *Sikh Regt., Ahmednagar, Bombay*.
- 1905 Graham, W. A., Esq., *Bangkok, Siam*; 35 *South Eaton Place, S.W. 1*.
- 1923 Gray, Mrs. H. A., 9 *Willoughby Road, Hampstead, N.W. 3*.
- 1888 Greathed, William, Esq., 67 *Chancery Lane, W.C. 2*.
- 1905 Green, F. W., Esq., M.A.
- 1899 Griffith, F. Llewellyn, Esq., 11 *Norham Gardens, Oxford*. (¶)
- 1921 Griggs, Major F. R., *Wigzell Grange, Wirksworth*.
- 1913 Grimsdale, Harold B., Esq., M.B., F.R.C.S., 3 *Harley Place, W. 1*.
- 1921 Grimble, Arthur, Esq., *Ocean Island, Gilbert and Ellice Islands Colony, West
Pacific*.
- 1905 Grist, C. J., Esq., M.A., *Smallfield, near Horley, Surrey*.
- 1919 Grove, E. T. N., Esq., *The White House, Limpsfield, Surrey*; *Brooks's Club*,
St. James's Street, S.W. 1.
- 1920 Grubb, Wilfrid B., Esq., *Springbank Lodge, Lasswade, Midlothian*.
- 1910 Gruning, E. L., Esq., 18 *Russell Mansions, Great Russell Street, W.C. 1*.
- 1922 Guest, Miss Edith Mary, M.D., 76 *Queen's Gate, S.W. 7*.
- 1917 Gunnell, A. Mortimer, Esq., F.R.Met.Soc., *Broomfield Park College, New
Southgate, N. 11*.
- 1889 Haddon, Alfred C., Esq., M.A., Sc.D., F.R.S., M.R.I.A., PAST PRESIDENT
(1901-1903), Reader in Ethnology in the University of Cambridge, Assoc.
Anthrop. Soc. Paris; Corr. Mem. Anthropol. Soc., Berlin, Florence, Rome
and Stockholm, 3 *Cranmer Road, Cambridge*. (*¶§)
- 1905 Haddon, E. B., B.A., *District Commissioner, Entebbe, Uganda*.
- 1923 Haffenden, Capt. J. R. Wilson, c/o *Junior Army and Navy Club, Horse Guards
Avenue, Whitehall, S.W. 1*.
- 1920 Haigh, P. B., Esq., I.C.S., *Karwar, N. Kanara, Bombay Presidency*.
- 1911 Hamilton-Grierson, Sir Philip, 7 *Palmerston Place, Edinburgh*.

Year of
Election.

- 1921 Harner, Ernest G., Esq., *Teesdale, Egmont Road, Sutton, Surrey.*
- 1922 Harper, Miss Elizabeth, *The Cottage, South Newington, near Banbury.*
- 1902 Harrison, Alfred C., Esq., 1616 *Locust Street, Philadelphia.* (*)
- 1911 Harrison, C., Esq., *Lucerne House, Lucerne Road, Highbury, N. 5.*
- 1904 Harrison, H. S., Esq., D.Sc., EDITOR, *The Horniman Museum, Forest Hill, S.E.;*
8 Gaynesford Road, Forest Hill, S.E. 23. (§)
- 1897 Hartland, E. S., Esq., LL.D., F.S.A., 13 *Alexandra Road, Gloucester.* (**)
- 1921 Hasluck, Mrs. Margaret, c/o *British Consul, Salonica, Greece; Newnham College,*
Cambridge.
- 1923 Hatchell, G. W., Esq., *Namanyere, via Dar-es-Salaam, Tanganyika Territory.*
- 1902 Haviland, H. A., Esq., M.D., *Normans, Rusey, Sussex.*
- 1905 Hay, Matthew, Esq., M.D., Professor of Forensic Medicine, *The University,*
Aberdeen.
- 1885 Heape, C., Esq., *High Lane, near Stockport.*
- 1920 Hemming, Arthur G., Esq., F.I.A., F.S.S., *Little Boundex, near Tunbridge Wells.*
- 1895 Hickson, Prof. S. J., D.Sc., F.R.S., *The University, Manchester.* (*)
- 1909 Higgins, H., Esq., M.A., *Rosaleyn, Trefriw, North Wales.*
- 1906 Hildburgh, W. L., Esq., M.A., Ph.D., F.S.A., *Hotel Rembrandt, Thurloe Place,*
S.W. 7. (*§)
- 1924 Hilton-Simpson, Mrs. Helen D., 13 *Portland Road, Oxford.*
- 1906 Hilton-Simpson, Melville W., Esq., F.R.G.S., *Sole Street House, Faversham,*
Kent; 13 Portland Road, Oxford. (§)
- 1916 Hitchins, A. B., Esq., A.M., D.Sc., Ph.D., c/o *Ansee Co. Research Laboratory,*
Binghamton, N.Y.
- 1923 Hobley, C. W., Esq., C.M.G., *The Chale, High View Road, Sidcup, Kent.* (§§)
- 1909 Hocart, Capt. A. M., *Anuradhapura, Ceylon.*
- 1919 Hodgson, A. G. O., Esq., c/o *The Secretariat, Nyasaland; Royal Societies Club,*
St. James's Street, S.W. 1.
- 1918 Hodgson, T. V., Esq., *Museum and Art Gallery, Plymouth.*
- 1914 Hollobone, Henry E. W., Esq., 19 *Tasman Road, Stockwell, S.W. 9.*
- 1913 Hooton, E. A., Esq., Ph.D., *Peabody Museum, Harvard University, Cambridge,*
Mass., U.S.A.
- 1915 Hopkins, J., Esq., F.R.C.S., 46 *Chisholm Road, East Croydon.*
- 1921 Hopkinson, Capt. E. C., *Edwinstowe, Chaucer Road, Cambridge.*
- 1923 Hornblower, G. D., Esq., O.B.E., 4 *Meadway Gate, Golder's Green, N.W. 11.*
- 1919 Hornell, James, Esq., c/o *Messrs. Thos. Cook & Son, Ludgate Circus, E.C. 4.*
- 1920 Howard, Miss D. R., *Cranford, Langley Road, Watford.*
- 1921 Howes, H. W., Esq., B.A., 2 *Fambridge Road, Maldon, Essex.*
- 1918 Hudspeth, Capt. W. H., B.A., *Chao-tong-fu, Yunnan, China.*
- 1897 Hügel, Baron A. von, *Croft Cottage, Barton Road, Cambridge.* (§)

Year of
Election.

- 1920 Hunt, Richard J., Esq., *Mision Chaqueña Embarcacion, F.C.C.N., Argentina.*
- 1912 Hunt, Walter, Esq., 41 *Eardley Road, Streatham, S.W. 16.*
- 1923 Hunter, Eric Archibald J., Esq., *Highland Light Infantry, 4th King's African Rifles, Bombo, Uganda, 12 Orford Terrace, Kelvinside, Glasgow.*
- 1898 Hutchinson, Rev. H. Neville, M.A., F.R.G.S., F.G.S., F.Z.S., 17 *St. John's Wood Park, Finchley Road, N.W. 8.*
- 1912 Hutchinson, W., Esq., B.A., F.R.G.S., F.Z.S., 34-36 *Paternoster Row, E.C. 4.*
- 1913 Hutton, J. H., Esq., C.I.E., I.C.S., *Kohima, Naga Hills, Assam, India.*
- 1898 Iles, George, Esq., *c/o Public Library, Ottawa, Canada. (*)*
- 1921 Ingrams, W. H., Esq., *Zanzibar; Junior Army and Navy Club.*
- 1923 Isaacs, Mrs. Susan, 53 *Hunter Street, W.C. 1.*
- 1921 Ives, C. St. John, Esq., *Mailor Estate, Kullakamby, Nilgiri Hills, S. India.*
- 1921 Iyer, L. K. Anantha Krishna, Esq., B.A., *Calcutta University, Senate House, Calcutta.*
- 1912 Jackson, H. C., Esq., *Sudan Civil Service, Malakal, Sudan.*
- 1915 James, Rev. Edwin O., *St. Thomas's Vicarage, Reading.*
- 1919 Jenness, D., Esq., M.A., *Victoria Memorial Museum, Ottawa.*
- 1921 Jervis, W. W., Esq., *The University, Bristol.*
- 1916 Johnson, H. J. T., Esq., *Oak Hurst, near Derby.*
- 1923 Johnston, Mrs. Frances S., 10 *Wested Coates Avenue, Edinburgh.*
- 1885 Johnston, Sir H. H., G.C.M.G., K.C.B., D.Sc., F.Z.S., *St. John's Priory, Poling, Arundel. (¶)*
- 1922 Johnston, Thomas Baillie, Esq., M.B., Ch.B., *Dean, Medical School, Guy's Hospital, London Bridge, S.E. 1.*
- 1923 Johnstone, James, Esq., F.R.C.S., M.B., B.A., *Tudor House, King's Road, Richmond, S.W.*
- 1921 Jones, C. Bryner, Esq., C.B.E., M.Sc., F.H.A.S., *Welsh Secretary to Ministry of Agriculture, 12 Laura Place, Aberystwyth.*
- 1914 Jones, Major D. Hedog, M.A., B.Sc., *c/o Rev. Canon Martin, Kelloe Vicarage, Coxhoe, Co. Durham; Education Office, Accra, Gold Coast Colony.*
- 1921 Jones, Ernest, Esq., M.D., 81 *Harley Street, W. 1.*
- 1910 Jones, F. W., Esq., *Professor of Anatomy, The University, Adelaide, S. Australia.*
- 1914 Jones, H. Sefton, Esq., 10 *Walton Place, S.W.*
- 1917 Jones, Mrs. G. C. Wood, *The University, Adelaide, S. Australia.*
- 1919 Jons, F. G., Esq.
- 1902 Joyce, Capt. T. A., O.B.E., M.A., *VICE-PRESIDENT, British Museum, W.C. (¶§)*
- 1907 Judge, James J., Esq., 2 *Apsley Road, Plymouth.*
- 1913 Julian, Mrs. Hester, *Redholme, Torquay.*

Year of
Election.

- 1896 Keith, Sir A., M.D., F.R.C.S., LL.D., F.R.S., PAST-PRESIDENT (1913-16),
ACTING-PRESIDENT (1922), Conservator of the Museum, Royal College
of Surgeons : 17 Aubert Park, Highbury, N. 5. (¶§)
- 1919 Kendrick, T. D., Esq., *Department of British and Medieval Antiquities, British
Museum.*
- 1923 Kerr, A. A., Esq., *University of Utah, Salt Lake City, Utah, U.S.A.*
- 1922 Kerr, Robert, Esq., M.A., Assistant Keeper of Art and Ethnographical Depart
ment, *Royal Scottish Museum, Edinburgh.* (*)
- 1911 Khan, S. S., Esq., *Medical College, Lucknow, India.*
- 1911 Kidd, Lt.-Col. A. E., R.A.M.C., *Fernlea, William Street, Dundee.*
- 1921 Kinvig, Robert H., Esq., *The School of Geography, 10 Abercromby Square,
Liverpool.*
- 1914 Kittredge, T. B., Esq., *U.S. Navy, Naval War College, Newport, Rhode Island,
U.S.A.*
- 1891 Kitts, Eustace John, Esq., *Dudley Hotel, Hove, Sussex.* (*)
- 1902 Kloss, Cecil B., Esq., F.Z.S., *Raffles Museum, Singapore, Straits Settlements.*
- 1914 Knight, Lieut.-Col. C. Morley, D.S.O.,
- 1881 Knowles, W. J., Esq., *Flixton Place, Ballymena, Co. Antrim.* (¶)
- 1915 Laidler, P. W., Esq., L.D.S., *Garies, Namaqualand, Cape Province, S. Africa.*
- 1918 Lake, Miss Hilda A., *Heage House, Crouch Hill, N. 4.*
- 1914 Lamb, Miss M. Antonia, 212 *South 46th Street, Philadelphia, Penn., U.S.A.*
- 1920 Lander, Miss Kathleen F., 69 *Albany Street, N.W. 1.*
- 1888 Law, Walter W., Esq., *Scarborough, New York, U.S.A.* (*)
- 1920 Lawford, H. E., Esq., 5 *Buckingham Palace Mansions, S.W. 1.*
- 1885 Lawrence, E., Esq., *St. Albans, Chalkwell Gardens, Westcliff-on-Sea.* (*)
- 1921 Lawson, E. H., Esq., M.D., C.M., *Ganges, British Columbia, Canada.*
- 1922 Layard, J. W., Esq., *Leaside, Hertingfordbury, Herts.*
- 1904 Lennox, D., Esq., M.D., *Ruddon Grange, Elie, Fife.* (*)
- 1922 Lestrade, G. Paul, Esq., M.A., 77 *Tlein Street, Cape Town, South Africa.*
- 1909 Leveson, H. G. A., Esq., M.R.A.S., F.R.G.S., *East India United Service Club,
St. James's Square, S.W. ; 2 Edwardes Place, Kensington Road, W. 8.*
- 1921 Leveson, W. E., Esq., 10 *St. James's Court, Buckingham Gate, S.W. 1.*
- 1922 Livesey, Rev. Herbert, B.A., L.Th., *West Street, Wigton, Cumberland.*
- 1920 Lloyd, Mrs. C. M., 19 *Thurlow Road, Hampstead, N.W. 3.*
- 1920 Lloyd, Bertram, Esq., 53 *Parkhill Road, Hampstead, N.W. 3.*
- 1919 Lloyd, G. T., Esq., I.C.S., c/o *Postmaster, Shillong, Assam ; Quiet House,
Macculay Road, Bath.*
- 1914 Loé, Baron Alfred de, Curator of Department of Prehistoric Antiquities,
Musées Royaux du Cinquantenaire, Brussels, Belgium.

Year of
Election.

- 1918 Long, Richard C. E., Esq., *Portarlinton, Ireland.*
- 1893 Longman, Charles James, Esq., M.A., 27 *Norfolk Square, W. 2.* (*)
- 1920 Longman, H. A., Esq., Director, Queensland Museum, *Brisbane, Australia.*
- 1921 Lothrop, S. K., Esq., 114 *Beacon Street, Boston, Mass., U.S.A.*
- 1923 Low, Alexander, Esq., *The University, Aberdeen.*
- 1915 Lynn-Thomas, Sir J., K.B.E., C.M.G., C.B., *Llwynidyrys Llechryd, Cardiganshire.*
- 1920 Lyons, A. P., Esq., *Daru, Papua, via Port Moresby.*
- 1918 Lyttle, Capt. W., *Claremont, Chefoo, China.*
- 1920 Macalister, Robert A. S., Esq., Professor of Celtic Archaeology, University College, Dublin, 18 *Mount Eden Road, Donnybrook, Dublin.*
- 1901 Mace, A., Esq., 14 *Hill Road, St. John's Wood, N.W. 8.*
- 1913 MacGregor, G. Laird, Esq., I.C.S., c/o Messrs. Grindlay & Co., 54 *Parliament Street, S.W. 1.*
- 1919 MacGregor, R. R. I., Esq., 311 *Badin Hall, University of Notre Dame, Notre Dame, Indiana, U.S.A.*
- 1918 MacHugh, Lt.-Col. R. J., 141 *King's Avenue, Clapham Park, S.W. 4.*
- 1899 MacIver, Capt. David Randall, M.A., D.Sc., F.S.A., F.R.G.S., c/o Brown, Shipley & Co., 123 *Pall Mall, S.W. 1.*
- 1920 Mackay, J. B. I., Esq., c/o *The Secretariat, Kaduna, Northern Provinces, Nigeria.*
- 1921 Mackay, R. F., Esq., *Glencruitten, Oban, Argyll, N.B. ; 165 Broadway, New York City.*
- 1910 Mackintosh, J. S., Esq., M.D., 2 *Platt's Lane, Hampstead, N.W. 3.*
- 1908 MacMichael, Capt. H. A., D.S.O., c/o Civil Secretary, *Khartoum, Sudan.* (§)
- 1885 MacRitchie, David, Esq., F.S.A. Scot., 4 *Archibald Place, Edinburgh.* (§)
- 1922 Maine, George F., Esq., *Flowerfield, Salisbury Road, E.*
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Dublin...Royal Dublin Society.

— Royal Irish Academy.

— Royal Society of Antiquaries.

Edinburgh...Royal Scottish Geographical Society.

— Royal Society of Edinburgh.

— Society of Antiquaries of Scotland.

Glasgow...Philosophical Society.*Liverpool*... University Institute of Archaeology.*London*...African Society.

— British Medical Association.

— British Psychological Society.

— Egypt Exploration Society.

— Folklore Society.

— Geologists' Association.

— Hellenic Society.

— Subject Index to Periodicals.

London...India Office, Whitehall.

— Japan Society.

— Nature.

— Palestine Exploration Fund.

— Quatuor Coronati Lodge, No. 2076.

— Royal Archaeological Institute.

— Royal Asiatic Society.

— Royal Colonial Institute.

— Royal Geographical Society.

— Royal Society.

— Royal Society of Literature.

— Royal Statistical Society.

— Royal United Service Institution.

— Science Progress.

— Society of Antiquaries.

Taunton... The Somersetshire Archaeological Society.*Truro*...Royal Institution of Cornwall.

EUROPE.

AUSTRIA-HUNGARY.

Agram...Kroätische Archäologische Gesellschaft.*Budapest*... Magyar Tudományos Akadémia.

— Magyar Nemzeti Néprajzi Östálya.

Orneow...Akademija Umiejetoński.*Vicuna*...Anthropologische Gesellschaft.

— K. Akademie der Wissenschaften.

BELGIUM.

Brussels...Académie Royale des Sciences.

— Collection de Monographies Ethnographiques.

— Instituts Solvay.

Brussels...Société d'Anthropologie de Bruxelles.

— Société d'Archéologie de Bruxelles.

DENMARK.

Copenhagen...Société des Antiquaires du Nord.

FRANCE.

Lyons...Société d'Anthropologie de Lyon.*Paris*...L'Anthropologie.

— Ecole d'Anthropologie.

— Institut de Paleontologie, Humaine.

— Musée Guimet.

— Répertoire d'Art et d'Archeologie.

— Revue de l'Histoire des Religions.

— Soc. de Geographie.

— Soc. des Americanistes.

— Société d'Anthropologie.

— Année Sociologique.

GERMANY.

- Berlin*...Berliner Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte.
— K. Museum für Völkerkunde.
Cologne...Bautenstrauch-Joest-Museum.
Gießen...Hessische Blätter.
Gotha...Petermanns Mitteilungen.
Halle-a-d-Saale...Kaiserliche Leopoldina Carolina Akademie der Deutschen Naturforscher.
— Deutsche Morgenländische Gesellschaft.
Hamburg...Museum für Völkerkunde.
Kiel...Anthropologischer Verein für Schleswig-Holstein.
Leipzig...Archiv für Religionswissenschaft.
— Museum für Völkerkunde.
— Orientalisches Archiv.
— Verein für Erdkunde.
Munich...Archiv für Rassen und Gesellschaft Biologie.
— Deutsche Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte.
Stuttgart...Zeitschrift für Morphologie und Anthropologie.

GREECE.

- Athens*...Ephemeris Archaeologikè.
— Annual of the British School of Archaeology.

ITALY.

- Florence*...Società Italiana di Antropologia, Etnologia, e Psicologia Comparata.
Rome...Accademia dei Lincei.
— Società Romana di Antropologia.
Turin...Archivio di Psichiatria.

NETHERLANDS.

- Amsterdam*...Koninklijke Akademie van Wetenschappen.

- Amsterdam*...Publications of the Koloniaal Instituut, Amsterdam.
Leiden...Internationales Archiv für Ethnographie.
The Hague...Koninklijk Instituut voor de Taal-, Land-, en Volkenkunde van Nederlandsch Indië.

NORWAY.

- Bergen*...Beregns Museum.

POLAND.

- Warsaw*...Bulletin Archeologique Polonaise.

RUSSIA.

- Dorpat*...Publications of the University.
Helsingfors...Suomen Muinaismuistoyhdistyksen Arkakauskirja (Journal of the Finnish Archaeological Society).
Moscow...Imper. Obshchestvo Lubitelei Iestestvoznania, Antropologii, i Etnografii.
Petrograd...Imper. Akademia Nauk.

SPAIN.

- Barcelona*...L'Institut de Ciències.
Madrid...Junta Superior de Excavaciones y Antigüedades.
— Junta para Ampliación de Estudios e Investigaciones Científicas.
San Sebastian...Sociedad de Estudios Vascos.

SWEDEN.

- Stockholm*...Academy of Antiquities, National Museum.
— Nordiska Museet.
— Ymer.
Uppsala...La Bibliothèque, l'Université Royale.

SWITZERLAND.

- Neuchâtel*...Soc. Neuchateloise de Géographie.
Zurich...Musée National Suisse.

AFRICA.

CAPE COLONY.

- Cape Town*...Royal Society of South Africa.
Transvaal, Johannesburg...The South African Institute for Medical Research.

EGYPT.

- Cairo*...Société Sultanièh de Géographie.
Giza...Archæological Survey of Nubia.
Khartum...Wellcome Laboratory Reports.

AMERICA.

ARGENTINE.

La Plata...Museum.

BRAZIL.

Rio de Janeiro...Museu Nacional.

CANADA.

Ottawa...Royal Society of Canada.

Toronto...Canadian Institute.

ECUADOR.

Quito...Academia Nacional de Historia.

PERU.

Lima...Inca.

UNITED STATES.

Berkeley, Cal....University of California.

Cambridge, Mass. ... Peabody Museum,
Science.

Chicago...Field Museum.

Ithaca, New York...American Journal of
Psychology.

Lancaster, Pa. ... American Folklore
Society.

New York...American Museum of Natural
History.

— Columbia University.

— Museum of the American Indian, Heye
Foundation.

Philadelphia...University Museum.

Washington...American Anthropologist.

— American Journal of Physical Anthro-
pology.

— Bureau of Ethnology.

— Journal of Heredity.

— Smithsonian Institution.

— United States Geological Survey.

— United States National Museum.

ASIA.

CHINA.

Shanghai...Royal Asiatic Society (China
branch).

INDIA.

Anuradhapura...Ceylon Archaeological
Survey.

Bombay...Anthropological Society.

— Indian Antiquary.

— Royal Asiatic Society.

Calcutta...Bengal Asiatic Society.

— The University.

Colombo...Royal Asiatic Society (Ceylon
branch).

Ranchi...Bihar and Orissa Research
Society.

Rangoon...Burma Research Society.

Sinla...Archaeological Reports.

JAPAN.

Tokio...Asiatic Society of Japan.

— Tokio-Daigaku (Imperial University).

JAVA.

Batavia...Bataviaasche Genootschap van
Kunsten en Wetenschappen.

PHILIPPINE ISLANDS.

Manila...Bureau of Science.

SIAM.

Bangkok...National Library.

STRAITS SETTLEMENTS.

Singapore...Royal Asiatic Society (Straits
Branch).

AUSTRALIA AND PACIFIC.

Honolulu ... Bernice Pauahi Bishop
Museum.

Melbourne...Royal Society of Victoria.

New Plymouth, N.Z....Polynesian Society.

Sydney...Australian Museum.

Sydney...Australasian Association for the
Advancement of Science.

— Royal Society of New South Wales.

Wellington, N.Z....New Zealand Institute.

— Dominion Museum.

EXCHANGES FOR "MAN."

ENGLAND.

- Hull*...The Naturalist.
Liverpool...Journal of the Gypsy Lore Society.
London...British Association.
 — Church Missionary Review.
 — Eugenics Review.
 — Journal of the East India Association.
 — Lancet.
 — School of Oriental Studies.
 — Science Progress.
 — Sociological Review.
 — South American Missionary Society.

ARGENTINE.

- La Plata*...Museum.

AUSTRIA-HUNGARY.

- Budapest*...Magyar Nemzeti Museum.
Lsove (Lemberg)...Ludu.
Mödling...Anthropos.
Prague...Obzor.
Uh. Hradiště...Pravěk.
Vienna...Wiener Prähistorische Zeitschrift

BELGIUM.

- Brussels*...Bulletin de la Société d'Études Coloniales.
 — Bull. de la Soc. Géographie.
 — Instituts Solvay.
 — La Revue Congolaise.
 — Missions Belges.

DENMARK.

- Copenhagen*...Meddelelser om Danmark Antropologie.

FRANCE.

- Dax*...Société de Borda.
Paris...Institut de Paleontologie Humaine.
 — Journal de Psychologie.
 — L'Anthropologie.
 — La Géographie.
 — La Nature.
 — La Revue Préhistorique.
 — L'Ethnographie.

- Paris*...L'Homme Préhistorique.

- Revue d'Ethnographie et des Traditions Populaires.
 — Société Préhistorique Française.
 — Statistique Générale de la France.

GERMANY.

- Danzig*...West Preussisches Provincial-Museum.
Dresden...Bericht des Vereins für Erdkunde.
Frankfurt a/M....Völker-Museum.
Giessen...Hessische Blätter.
Gotha...Petersmanns Mitteilungen.
Guben...Niederlausitzer Mitteilungen.
Hamburg...Museum für Völkerkunde.
Kiel...Mitteilungen des Anthropologischen Vereins in Schleswig-Holstein.
Munich...Correspondenzblatt.
 — Geographische Gesellschaft.
 — Prähistorische Blätter.
Nürnberg...Bericht der Natur-historischen Gesellschaft.

INDIA.

- Calcutta*...The University.
Simla...Archæological Reports.
Lahore...Punjab Historical Society.
Poona...Bhandarkar Oriental Research Institute.
Ranchi...Man in India.

ITALY.

- Como*...Rivista Archeologica della Provincia de Como.
Rome...Rivista Italiana di Sociologia.
 — Reale Società Geografica Italiana.
Milan...Scientia.

JAVA.

- Watteveden*...Djâwâ.

MINORCA.

- Mahon*...Revista de Menorca.

NETHERLANDS.

- Amsterdam*...Nederlandsch Indie, Oud und Nieuw.
Leiden...Rijks Museum van Oudheden.

NORWAY.

- Trondhjem*...K. Norske Videnskabers Selskab.
Rome...Rassegna di Studi Sessuali.

PALESTINE.

- Jerusalem*...The American School of Oriental Research.

PORTUGAL.

- Lisbon*...Archeologo Português.
 — Archivo de Anatomia e Antropologia.
Porto...Sociedade Portuguesa de Antropologia e Etnologia.

RHODESIA.

- Bulawayo*...Proceedings of the Rhodesian Scientific Association.

SIAM.

- Bangkok*...Siam Society.

SPAIN.

- Barcelona*...Estudis I. Materials.
San Sebastian...Sociedad de Estudios Vascos.

SWEDEN.

- Uppsala*...La Bibliotheque, L'université Royale.

SWITZERLAND.

- Basel*...Naturforschenden Gesellschaft.
Geneva...L'Institut Suisse d'Anthropologie Générale.
 — Ville de Genève.
Zürich...Schweizerisches Archiv für Volkskunde.
 — Jahresbericht der Schweiz-Gesellschaft für Urgeschichte.

AFRICA.

- Natal, Pietermaritzburg*...Museum.
Egypt, Khartoum...Sudan Notes and Records.
Senegal, Dakar...Bulletin du Comité d'Études Historiques et Scientifiques de l'Afrique Occidentale française.

ECUADOR.

- Quito*...Academia Nacional de Historia.

MEXICO.

- Mexico*...Ethnos.

PERU.

- Lima*...Revista del Archivo Nacional del Perú.
 — Revista de Psiquiatria Disciplinas.

UNITED STATES.

- Berkeley, Cal.*...University.
Boston...American Journal of Archaeology.
Chicago...Open Court.
New York ... American Museum of Natural History.
 — Museum of the American Indian Heye Foundation.
 — Science
Philadelphia...American School of Oriental Research.
 — Proceedings of American Philosophical Society.
Washington ... Bureau of American Ethnology.
Tahiti, Papeete...Bulletin de la Société d'Études Océaniques.

YUGOSLAVIA.

- Zagreb*...Narodna Starina.

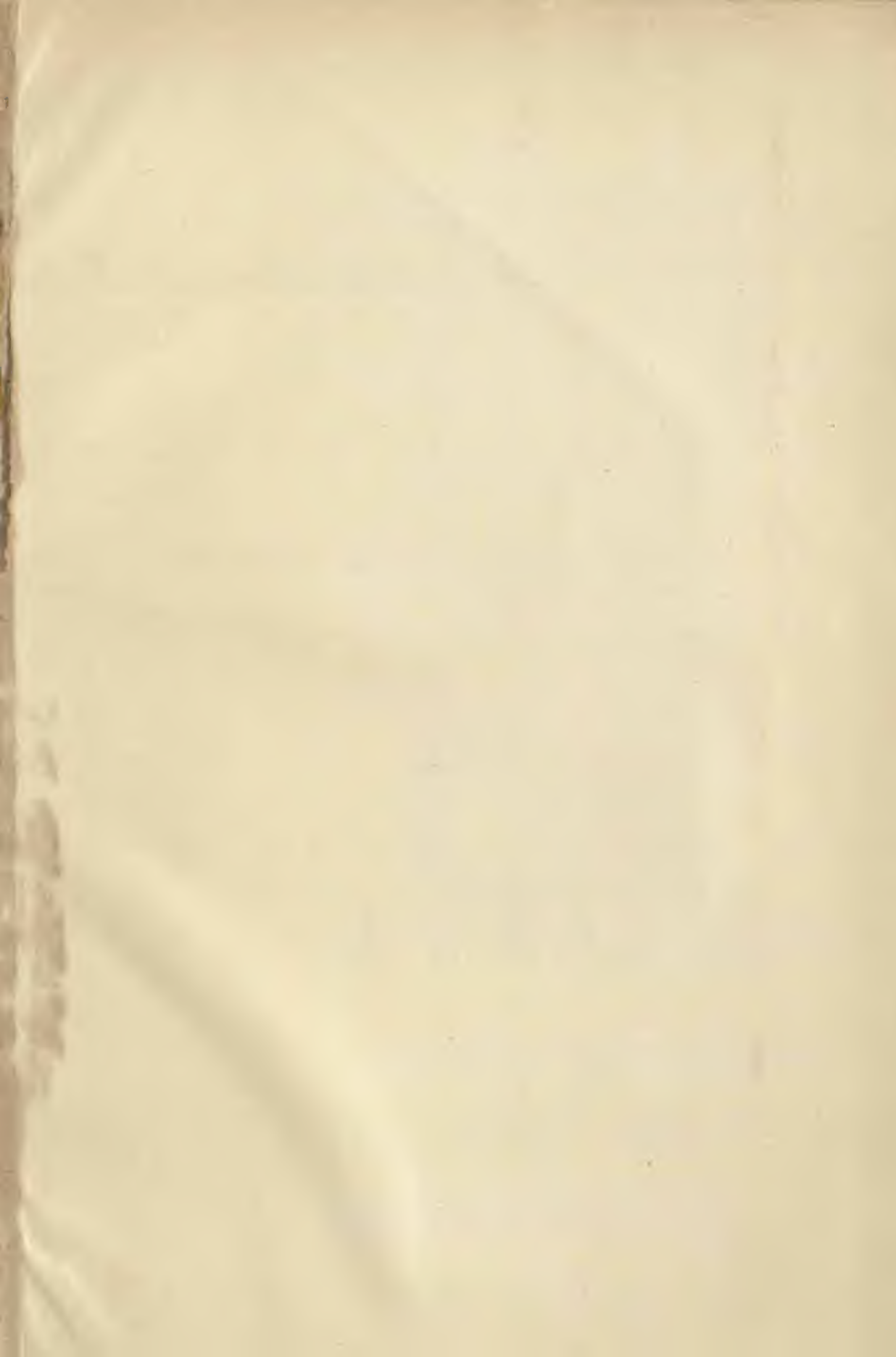
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